February 10, 1936

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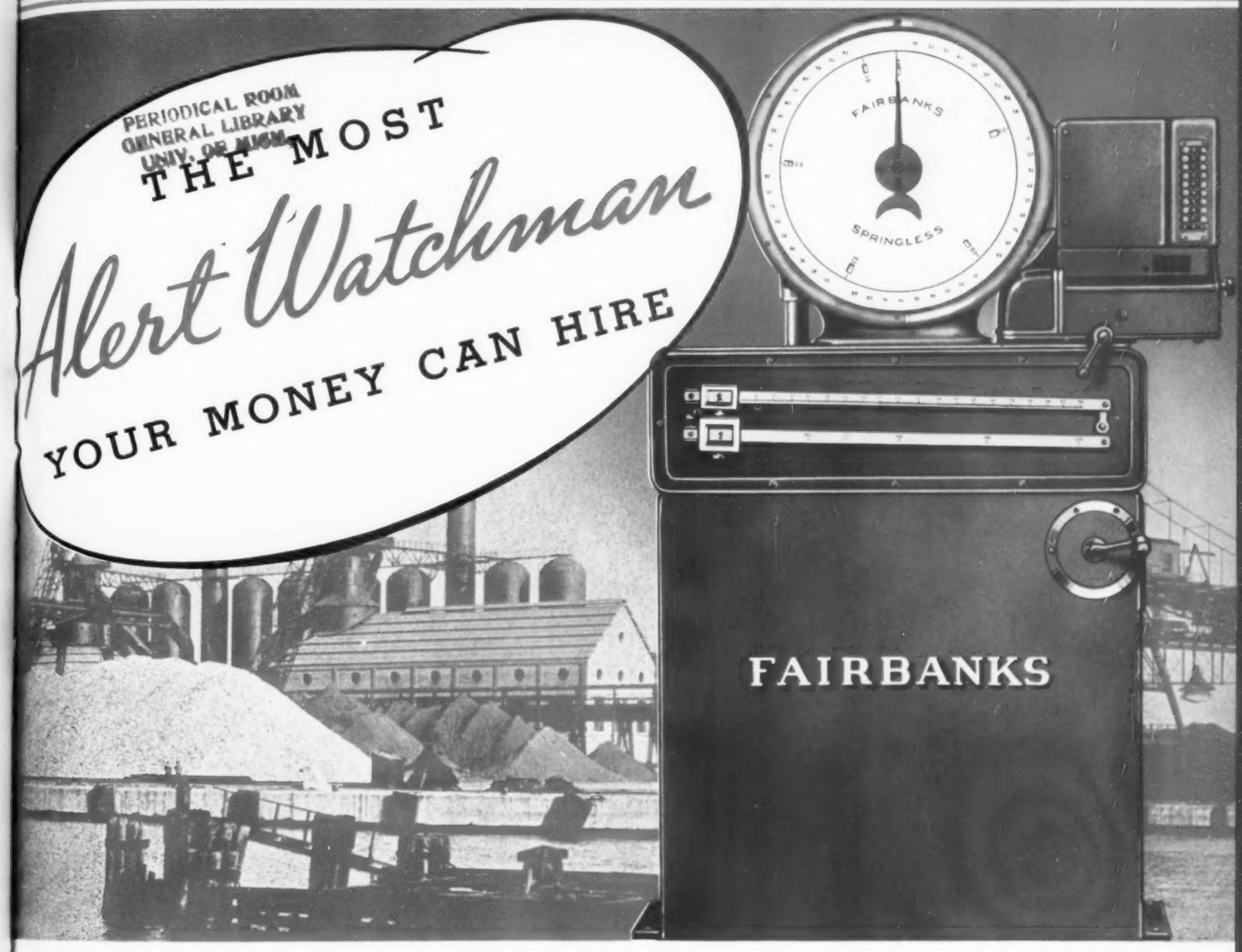

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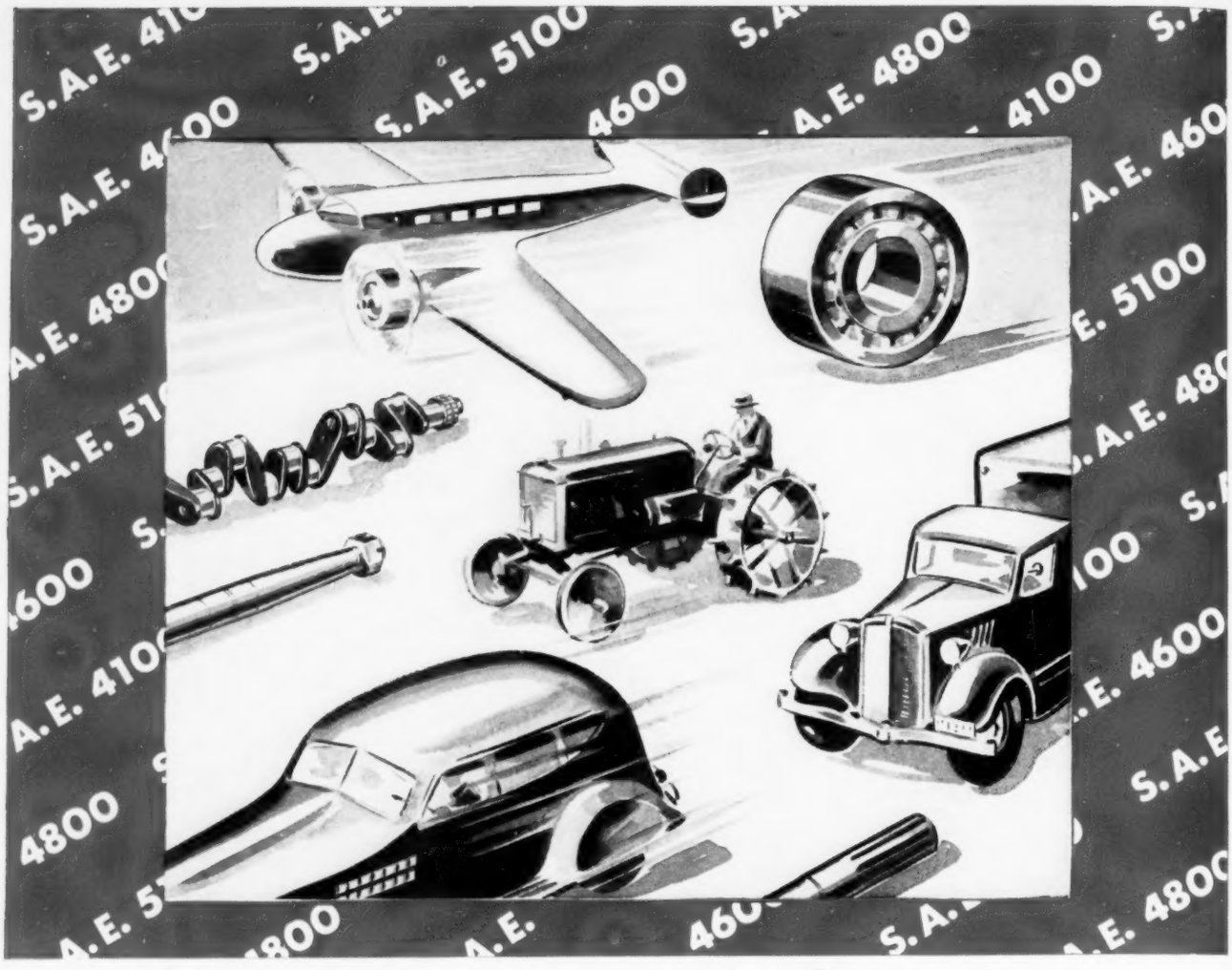

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Practically every one of the alloy analyses now recognized as standard was originally developed to meet the problem of a consumer who had to have a better steel for a given job. Many of these analyses—notably the S.A.E. 4100, 4600, 4800 and 5100 steels—were first produced in Republic's alloy mills.

Today, as in the early days of the alloy steel industry, Republic is most anxious to study special conditions and to cooperate with steel users in the development of steels to meet definite requirements. Avail yourself of Republic's knowledge and experience, and the facilities of Republic's Research and Metallurgical Laboratories, the largest in the industry. Let us tell you about the new steels now being developed for industry.

Republic Steel CORPORATION

ALLOY STEEL DIVISION, MASSILLON, OHIO
GENERAL OFFICES: CLEVELAND, OHIO

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STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

For forty-eight years—IRON TRADE REVIEW

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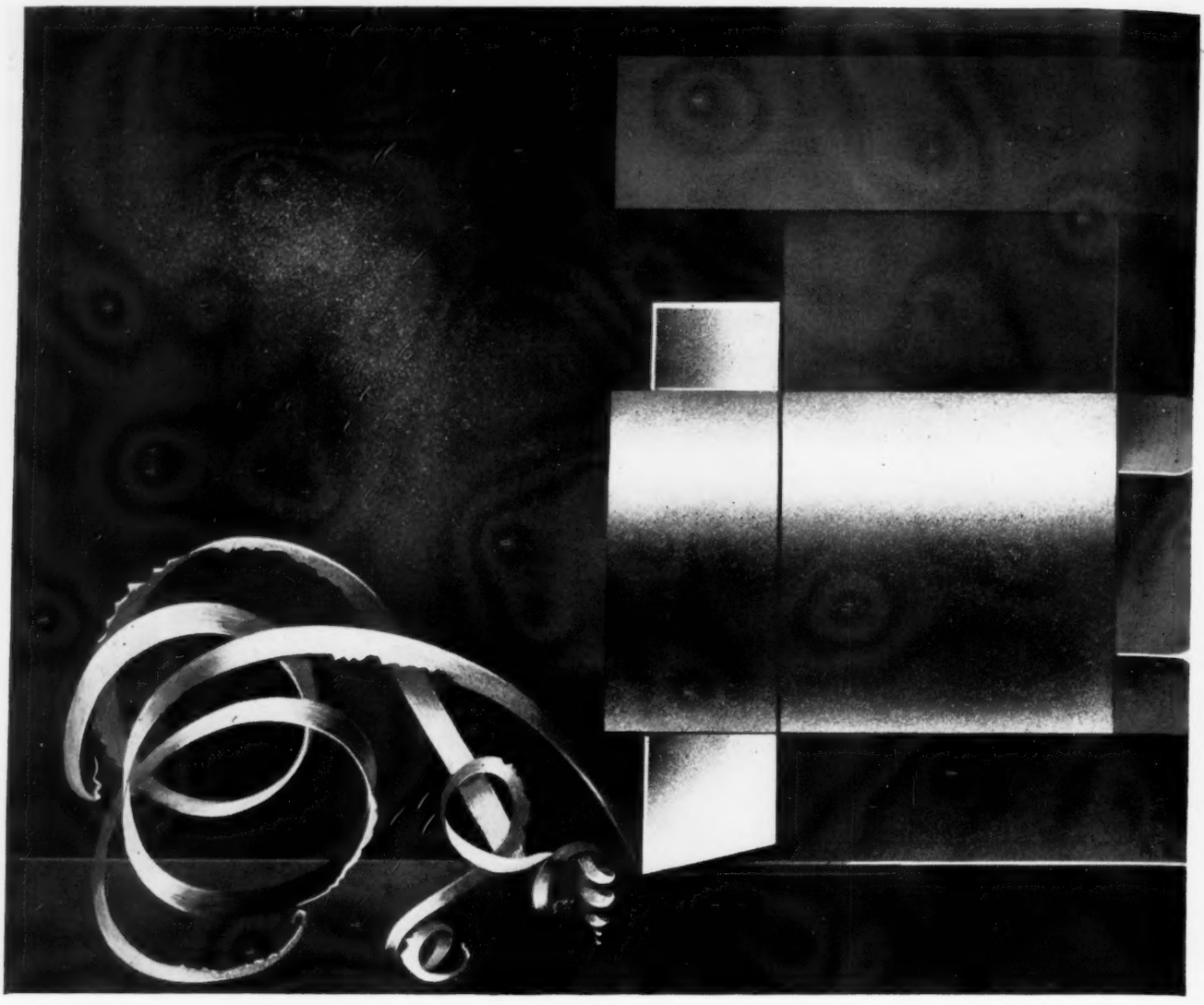


MOLY pares machining costs

MACHINE SHOP cost sheets often contain an accumulation of items that are avoidable. Some are caused by hold-overs from other processes — rolled-in scale — non-uniform hardness — distorted parts — meaning excessive tool, labor and material costs.

They are avoidable by standardizing on Molybdenum steels. Forgings are less likely to be scaly, seamed, or temper brittle. Carburized parts are less apt to be inconsistently distorted. High cutting speeds are safer and close tolerances more easily maintained. Time, power, labor, tool and material costs can be greatly reduced.

One maker of tool joints for oil-well service — a high-volume precision job — reports a 10% saving in over-all machine costs by standardizing on Chrome Moly steel (SAE 4140).

Your particular case may not be exactly similar, but — the savings in production costs effected by Moly steels and irons are not confined to the machine shop. So, it will pay you to investigate Moly in connection with your own problems. Our laboratory facilities are available if you are interested. Meantime our helpful technical book, "Molybdenum," is yours for the asking — as is also our periodically published news-sheet, "The Moly Matrix." Climax Molybdenum Company, 500 Fifth Avenue, New York.

CUTS COSTS CLIMAX Mo-lyb-den-um CREATES SALES

MOLY

As the Editor Views the News

REPUBLIC'S chairman, T. M. Girdler, last Wednesday packed a load of common sense concerning labor relations into his address to members of the American Management association. He declared that "those who propose to tax business for social security place major emphasis upon provision for unemployment, whereas if you are going to solve the unemployment problem the emphasis should be put upon policies which will make for steady and increasing employment by industry. The measures which tend to discourage business through threat of a tax burden heavier than business can carry therefore are helping to prolong the very unemployment which we all seek to relieve."

• • •

Mr. Girdler's remarks (p. 16) probably reflect with extreme accuracy the attitude of the majority of forward-looking, industrial executives toward labor problems. It is an attitude of solicitude for the employe's interest, of recognition that his income should be increased, and of determination that his job shall be made more secure. Most employers are pretty sensible about workers' wants. They know that the average employe wants fair wages and a steady job far more than anything else. More and more employes are realizing that it is industrial activity —not political promises or the effort of organized labor unions—that will provide those two important fundamentals.

Workers Want Job Security

• • •

Would you believe that on the average about one-fifth of the number of companies in the United States retire from business each year? This seems incredible, yet it is true. One reason is that it is easy to launch a new business. Another is that many owners or operators of business concerns (p. 27) either lack the capacity for good management or are unable to organize effectively to perpetuate it. The appalling turnover in business shows that in spite of this country's much vaunted superiority in mass production and other forms of mechanization, there still is room for much improvement in its technique of administration and management. Statistics of discontinuances in business show that management breaks down in good times almost as frequently as during a depression.

Turnover Is Far Too High

• • •

Much has been written about the necessity of utilizing jigs, mechanical handling and holding devices, and other auxiliaries in order to obtain efficiency in welding operations. In most cases these remarks have been intended to apply to fusion welding. In fact, mechanization of welding has been developed to a high degree in gas and electric arc welding. But little attention has been paid to forge welding, and for that reason many readers will be surprised to know that an Ohio boiler and tank manufacturer has effectively "mechanized" roll and hammer welding. The equipment (p. 30) which this company has developed for the fabrication of tanks will be an eye-opener to many operators of shops where forge welding is employed.

Mechanizing Forge Welding

• • •

While on the subject of mechanization, reference should be made to a recent step in the application of oxyacetylene flame hardening to gear teeth. The effectiveness of this process for localized surface hardening is well known. Logical, therefore, is the development by a leading machine tool builder (p. 42) of a machine which makes the hardening of teeth on gears a mechanical instead of a hand operation. Operation of the machine, except for indexing, is automatic. . . . STEEL'S "Forum on Modernization" this week carries an interesting account of a low bidder who was lucky enough to make a profit through discovery of a new alloy material. The story illustrates how important it is to keep abreast of new developments in ferrous and nonferrous metals.

Flame Hardening a la Machine

E. L. Shaner

Steel Chiefs Cite Position on War Contracts at Nye Probe

WASHINGTON REPRESENTATIVES of the Bethlehem Steel Corp., Carnegie-Illinois Steel Corp., and Midvale Co. took the stand in Washington Friday before the Nye munitions investigating committee, which is attempting to build up a case on war profits and industrial and financial incentives for war as a means of supporting legislation for stricter neutrality.

The testimony of executives of these three companies was not spectacular or calculated to supply a Roman holiday, as was the case with representatives several weeks ago of J. P. Morgan & Co.

In fact, the steel executives narrowly escaped being called at all, because Senator Nye's insinuations that President Wilson falsified in regard to his knowledge of European war agreements aroused old line Democrats in the senate and reduced his appropriation for continuing the investigation.

Reviews Armor Plate Sales

Fred A. Shick, vice president and comptroller of Bethlehem, testified in detail concerning the company's armor plate plant at Bethlehem. He stated that since 1925 Bethlehem has supplied a small amount of armor plate to Latvia and the Argentine, but none to other foreign governments.

During the World war, Mr. Shick testified, Bethlehem supplied war materials amounting to $40,831,065 to France, and $58,436,236 to Great Britain, through J. P. Morgan & Co. Some of these foreign contracts were negotiated by Charles M. Schwab, now chairman of Bethlehem.

According to Mr. Shick, armor plate contracts are less profitable than those for other army and navy supplies. On specified jobs, armor plate profits were 21.1, 6.5, 5.89, and 2.21 per cent. He placed gun forging profits on four contracts at 27, 28, 18.47, and 18.09 per cent.

From 1922 to 1930, Bethlehem manufactured no armor plate at all, and from 1927 to 1934 about 10 per cent of the capacity at the armor plate plant was devoted to commercial production. Without specifying, Mr. Shick declared that in certain classes of manufacture, Bethlehem has better facilities than its competitors.

William H. Johnstone, assistant secretary of Bethlehem, testified in regard to the manganese ore operations of the company. It purchases all of its ore and has no interest in any mines, he stated. Its imports are practically all derived from Russia, India, Africa, and Brazil, with small quantities from Cuba.

No Domestic Ore Contracts

Bethlehem has purchased small lots of manganese ore from domestic producers, including 468 tons in 1934 and 222 tons in 1935, but makes no long-term contracts. According to Mr. Johnstone, domestic producers do not have the proper grade of ore, not enough is produced, and prices are too high, being 25 to 30 per cent above the market. Last year Russia supplied more than half of Bethlehem's manganese requirements.

Harry L. Frevert, president; James M. Milliken, treasurer; and Thomas A. Sappington, chief accountant, all of the Midvale Co., Nicetown, Philadelphia, testified in detail in regard to costs and depreciation.

Mr. Frevert pointed out that the Baldwin Locomotive Works owns 16 per cent of Midvale stock, and that from 1930 to 1935 possibly 20 per cent of the capacity of the company was used for military work.

Benjamin F. Fairless, president of Carnegie-Illinois, also testified before the committee.

United Occupies Wooster Plant

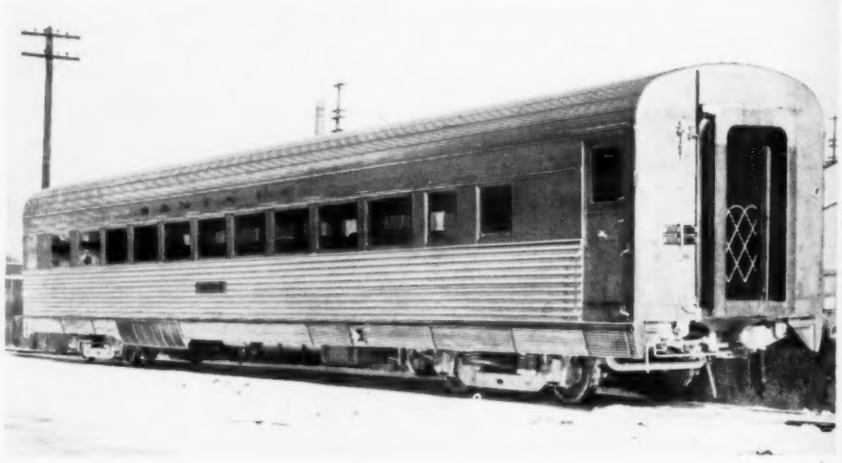
UNITED ENGINEERING & FOUNDRY CO., Pittsburgh, on Feb. 6 formally acquired possession of the Wooster, O., plant of Mackintosh-Hemphill Co., Pittsburgh.

The purchase, which had the approval of federal court at Pittsburgh late in December because Mackintosh-Hemphill Co. is undergoing reorganization, was completed late Feb. 5. Purchase included, in addition to the Wooster plant, all drawings and patterns of the Mackintosh-Hemphill Co. used in the manufacture of rolling mill equipment.

The Wooster plant covers 11 acres with machine shop, forge shop and fitting and erection floor. The heavy machinery section is entirely modernized. Single pieces up to 150 tons can be handled and the largest rolling mill machinery assembled.

Among the equipment which United Engineering will build in the future will be replacement parts for Mackintosh-Hemphill mills and the universal mills, three-high balanced

New Santa Fe Stainless Steel Coach



A new type of railroad passenger coach, built by the Edward G. Budd Mfg. Co., Philadelphia, for the Atchison, Topeka & Santa Fe railroad, is being displayed by the latter. Stainless steel is used liberally in this coach, which weighs only 83,000 pounds compared with 160,000 pounds for the ordinary type. The car is insulated and air-conditioned. Windows contain double panels of shatterproof glass, with nitrogen hermetically sealed between them to prevent frost and collection of moisture. The car will accommodate 52 passengers and has seats of the revolving and reclining type. Cushions are rubber pillows. Trucks have special features, including hydraulic shock absorbers and rubber insulation

sheet mills and precision thrust bearings for rod and merchant bar mills formerly furnished by Mackintosh-Hemphill Co.

H. Kuthe, who has been superintendent at Wooster, will continue in that position for United Engineering.

Bill To Curb Exports of Tin Plate Before President

President Roosevelt has before him —and is expected to sign—a bill to prohibit the exportation of tin plate scrap except under license by the President, to be issued "upon such conditions and regulations as he may find necessary to assure in the public interest fair and equitable consideration to all producers of this commodity". The penalty for evasion is a fine of $500 or a year's imprisonment, or both.

The bill was passed by the senate last session and by the house last week. Behind it were the two companies engaged in detinning, and operating five plants. It is aimed, for one thing, to curb exports to Japan, which has been taking about 25,000 tons of this scrap annually, part of which is used in the manufacture of toys.

Proponents of the bill argued that normal consumption of tin in the United States is 60,000 tons, none is produced domestically, and that detinning plants might supply one-third of the domestic requirement in event war shut off imports.

Tower Sees 1936 Modernizing Costing Steel $200,000,000

THE steel industry will spend approximately $200,000,000 for modernizing equipment and for new finishing capacity in 1936, Walter S. Tower, executive secretary, American Iron and Steel institute, said Thursday in an address before the California state chamber of commerce at Del Monte, Calif.

"The expected outlay this year compares with $140,000,000 in 1935," said Mr. Tower. "These expenditures will add little or nothing to the capacity of the industry to produce raw steel. Practically every dollar is being spent to improve methods of manufacture and to make a better product for the customer."

According to Mr. Tower, employment in the steel industry has reached a figure approximating the total number of employes in the years of peak activity in 1928 and 1929. He said further:

"Under these circumstances it seems clear that in its responsibility for giving employment to workers normally attached to it, the industry has made a genuine contribution to recovery.

"The problem of restoring the industry to a profitable basis is one of great importance because only when that has been solved can there be any assurance of steady employment for the workers, security for fair wages, or a return to the industry's half million stockholders.

"In order for there to be any real recovery in the steel industry, there must be first a better volume of business and second a reasonable degree of price stability at a fair level of prices.

"Both of these aspects of the steel industry have been so surrounded by a fog of misunderstanding, misinformation and deliberate misrepresentation, that I believe it is time for some plain speaking in respect to them.

Critics Are Misinformed

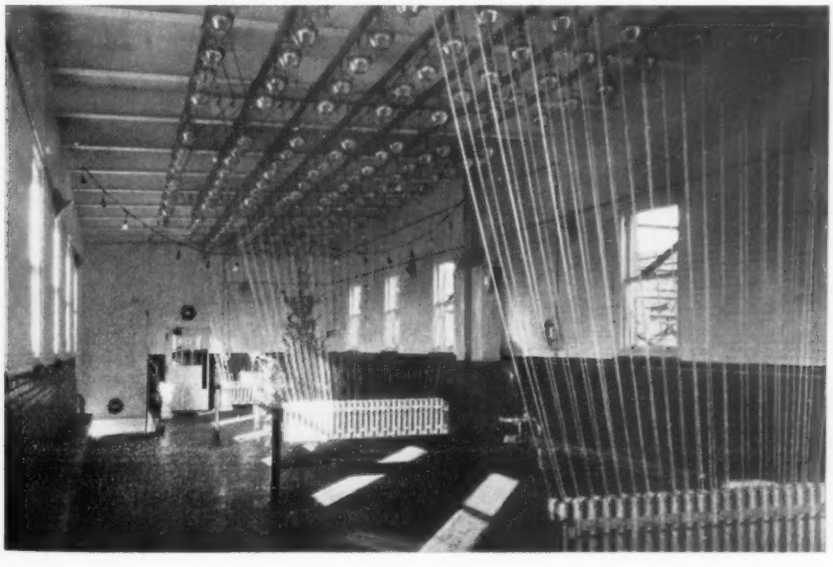
"There are men who would have the public believe that the steel industry is opposed to the principle of mass production; men who allege that the industry operates a monopoly to curb output, to maintain prices rigidly and at artificially high levels, and who charge that by such policies the industry has retarded both its own recovery and recovery in general.

"Such critics are careless of the truth. The facts show that the steel industry always has been fully in accord with the principle of mass production which makes for prices low enough to encourage mass consumption. Its mills are equipped with capacity to meet any demand. And toward that end the industry has expended many hundreds of millions of dollars in increasing the efficiency of its processes and improving its products.

"By these means steel has been able to make far-reaching contributions to modern civilization and to the advancement of the American standard of living. Some indication of the extent of those contributions may be seen in the fact that from 1900 to 1929 the annual output of steel for each family in this country increased from about 1000 pounds to nearly 3000 pounds.

"These figures mean that in the span of a few decades the steel industry broadened its markets and vastly extended the range of uses for its products. Such advances were made possible only by extensive re-

For the Comfort of Bethlehem Employes



Spacious locker room in the new welfare building built by the Bethlehem Steel Co. for employes in the merchant mills of the Lehigh division at Bethlehem, Pa. To the right-center is a heat-diffusing unit, which in summer will function as an air-conditioning unit. The building accommodates 977 men in 3-shift spreads, is 2 stories, walls and ceilings are white with black trim to the level of the windows. Quarters for mill men are separate from those for other employes because of the heavy shoes and other protective habiliments

search, and by application of methods of mass production to the fullest extent feasible in steel making. The results, in these years of striving for recovery, have been immeasurably valuable.

"I have referred to the need for a reasonable degree of price stability at a fair level of prices as a vital factor in balanced recovery. Perhaps it is necessary to state precisely what is meant by the term. To my mind, stability of prices does not in any proper sense of the term mean artificially high prices nor does it imply so-called rigid or 'fixed prices.'

"It implies no more than adherence by sellers to fair commercial methods, which exclude destructive price competition, secret concessions and rebates, and similar evils. From such adherence should come a reasonable measure of price stability at levels fair alike to seller and to buyer—low enough to encourage buying, high enough to permit fair wages to workers and a reasonable return to stockholders.

"You will all agree that no industry is justified in putting its prices at an artificially high level. In doing so, it deliberately places itself in a vulnerable position. By the same token there is no justification for any industry to price its products below a level which will yield a profit on a fair volume of business. When that is done and losses pile up, employment and wage levels are imperiled, stockholders are penalized, and the whole structure of the industry is undermined.

"The price levels for steel products must be sufficient to maintain wage rates for workers in the industry on a scale consistent with American standards of living and to provide some reward for investors."

Girdler Warns Panaceas React on Labor

IT IS to the interest of American business to pay workers the highest wage possible without jeopardizing its existence in a competitive market, T. M. Girdler, chairman and president of Republic Steel Corp., Cleveland, declared in an address Wednesday before the industrial relations conference of the American Management association in Chicago.

"Management must think in terms of increasing the worker's income not because someone has told him that he ought to lead an abundant life, but because greater buying power of the workers broadens the markets for industry, increases employment and is in the interest of everyone," said Mr. Girdler.

"No man can get more than a business can afford to pay him without imperiling his job altogether."

Both management and the employe are directly interested in the success of the enterprise for which they work, and they should co-operate toward that success for out of it comes the incomes of both, Mr. Girdler declared. He said further:

"The great need of business today —and of employes today—is confidence to warrant the investment of large funds in projects looking toward the future. Never in the history of this country has there been a greater need for new industrial ventures and for the investment of money and man power in industrial re-equipment as there is today.

"In the steel industry we very definitely see the possibility of steady work over a long period providing we can plan with some assurance for the future. Many new markets have been developed in the steel industry and vast potential markets are clearly visible upon the horizon if business and capital are permitted to proceed under conditions which do not hamper enterprise.

"A great deal of talk goes around about what the worker wants. All in all, the steel worker has shown himself a level headed individual and one who in the past years of stress has shown himself immune to the lures of false prophets. He has two all-important questions to which he would like to get an answer. Those are: (1) How can I be assured a living wage? and (2) How can I be assured a steady job?

"If we could answer those two questions to his satisfaction, most problems in industrial relations would be solved. For a living wage should be ample to provide not only for immediate subsistence but also for the security of the worker and his family. American industry has long recognized this principle. American high wages and the American standard of living are based upon this principle.

"Wages have advanced steadily over the years in the industry with which I am associated upon this principle. Unfortunately, conditions have arisen which interrupted all our efforts, weakened our markets, reduced our productivity and threw many workers out of employment. It was possible for some plants to care for their employes in spite of huge losses and the peril of eventual bankruptcy.

"These efforts, however, proved to be inadequate because the crisis prolonged itself for too long a period. The situation of both the employer and the employe, for too long, did not improve because the markets did not improve.

"The worker has been disturbed by his experience during the past six years. The American worker does not want to live on charity and relief. He does not want to live on the bounty of the government or of any private individual. He wants to live on his wage.

"Those who propose to tax business for social security place major emphasis upon provision for unemployment, whereas if you are going to solve the unemployment problem the emphasis should be put upon policies which will make for steady and increasing employment by industry. The various measures which tend to discourage business through threat of a tax burden heavier than business can carry, are therefore helping to prolong the very unemployment which we all seek to relieve."

Meetings

TRAFFIC Club of Pittsburgh will hold its 35th annual dinner at the William Penn hotel, Pittsburgh, March 5. As in the past, it is expected that the event will be attended by leading industrial and railroad executives.

Col. George T. Buckingham, senior member of the law firm of Defrees, Buckingham, Jones & Hoffman, Chicago, is the speaker of the evening. He is widely known as a public speaker on patriotic and economic subjects.

The speakers' committee consists of H. C. Graham, assistant to the president and general traffic manager, Jones & Laughlin Steel Corp.; William F. Morris Jr., vice president, Weirton Steel Co.; and H. C. Oliver, freight traffic manager, Pennsylvania railroad.

Arrangements for the dinner are in charge of Howard M. Daschbach, United States Steel Corp., and Warren W. Brown, Nickel Plate railroad.

PLAN FOUNDRY MEETING AT BIRMINGHAM, FEB. 27-28

Birmingham, Ala., sections of the American Society of Mechanical Engineers and the American Foundrymen's association are planning a joint foundry meeting for foundrymen and engineers in the Birmingham district, probably Feb. 27 and 28 in Birmingham.

The program probably will include a discussion of sand control, a paper on the use of alloys in iron, and a talk on grinding castings.

Those co-operating in the meeting include Joseph W. Eshelman, chairman of the Birmingham section of the A.S.M.E.; L. N. Shannon, Stockham Pipe & Fittings Co.; Dick Deas, American Cast Iron Pipe Co.; and Thomas J. Carpenter, Republic Steel Corp.

ANNOUNCE PAPERS FOR A.S.T.M. MEETING IN PITTSBURGH

The 1936 regional meeting of the American Society for Testing Materials to be held at the William Penn hotel, Pittsburgh, March 4, will be conducted as a symposium on "High-

Strength Constructional Metals." Sessions are scheduled for morning and afternoon, one to be devoted to nonferrous metals and the other to steels.

According to the preliminary program, the following papers will be presented: "Alloys of Copper," by H. A. Bedworth, superintendent of service engineering, American Brass Co.; "Aluminum and Magnesium Alloys," by E. H. Dix Jr., chief metallurgist, Aluminum Research laboratories, Aluminum Co. of America; "Nickel and Its Alloys," by A. J. Wadhams, International Nickel Co. Inc.; "Carbon and Low-Alloy Steels," by E. F. Cone, editor, *Metals and Alloys;* and "Corrosion-Resisting Steels," by E. E. Thum, editor, *Metal Progress.*

PHILADELPHIA IS GEAR MAKERS' CONVENTION CITY

American Gear Manufacturers association, of which J. C. McQuiston, is manager-secretary, will hold its Penn Lincoln hotel, Wilkinsburg, Pa. twentieth annual convention at the Adelphia hotel, Philadelphia, April 20-21. Russell C. Ball, Philadelphia Gear Works Inc., Philadelphia, is chairman of the convention committee and B. F. Waterman, Brown & Sharpe Mfg. Co., Providence, R. I., is chairman of the program committee.

DEFOREST TO ADDRESS JOINT MEETING IN CHICAGO

Prof. A. V. deForest, Massachusetts Institute of Technology, Cambridge, Mass., will address a joint meeting of the Chicago district committee of the American Society for Testing Materials and the Chicago chapter of the American Society for Metals, March 12. His subject will be "Unusual Methods of Inspection."

PLAN JOINT CHICAGO MEETING

Chicago chapter of the American Foundrymen's association, Chicago section of the American Society of Mechanical Engineers, and the Western Society of Engineers, are cooperating again to hold a joint meeting to present engineering data on cast metals to the Chicago district engineers. This meeting will be held in the auditorium of the Engineering building, 205 West Wacker drive, Chicago, March 16.

CALL YOUNGSTOWN MEETING

Spring engineering conference under the auspices of the combustion engineering division of the American Iron and Steel Electrical Engineers will be held at the Ohio hotel, Youngstown, O., April 22 and 23.

Aluminum Co. of America, Pittsburgh, has reopened the reduction unit of its plant at Niagara Falls, N. Y., idle for five years.

Scrapping Adrian And Punxy Stacks

ADRIAN FURNACE CO. on Feb. 5 closed the contract for sale and dismantling of the Adrian blast furnace at Du Bois, Pa. H. E. Salzberg Co. Inc., New York, was awarded the contract, bidding $26,150.

United Iron & Metal Co. and M. N. Landay Co., Pittsburgh, submitted a joint bid of $25,125, and Max Solomon Co., Pittsburgh, was third at $23,750.

It is estimated that about 2500 tons of various grades of iron and steel scrap will be realized.

The Adrian furnace at Du Bois was last operated in 1930. It is a small blast furnace with an annual capacity of 85,000 tons and formerly had operated on lake ores and beehive coke. The furnace has four stoves, 80 x 22 feet, and three steam blowing engines, but does not have by-product ovens. Height of the stack is 80 feet with a 12-foot hearth and a 19½-foot bosh.

Recently the Punxsutawney Furnace Co., also at Du Bois, sold its Punxy furnace at Punxsutawney also to the Salzberg company for dismantling. This blast furnace will also net 2000 to 2500 tons for scrap and includes four 80 x 20-foot stoves, a stack 72 feet in height, and three steam blowing engines. When last operated in 1926, the Punxy furnace used lake ores and by-product coke.

Decision to scrap these two merchant blast furnaces narrows the list of potentially active stacks in western Pennsylvania. Leetonia, O., a few months ago sold the Cherry Valley blast furnace, formerly owned by Davison Coke & Iron Co., for scrap. United States Pipe & Foundry Co. has sold its Scottdale, Pa., blast furnace for junking recently, and another merchant furnace removed from the active list in the past year is the Stewart furnace at Sharon, Pa.

Among the inactive merchant furnaces now in this district are the Sharpsville, Pa., and Claire, Pa., furnaces of Davison Coke & Iron Co., two Black Lick, Pa., furnaces of Republic Steel Corp., formerly operated by Corrigan, McKinney Steel Co., and the Struthers, O., stack of Struthers Iron & Steel Co.

Urges Wider Use of Steel For Permanent Dams

Members of the metropolitan section of the American Society of Civil Engineers were urged to develop wider use of steel frame construction for large dams by Dr. Otis E. Hovey, consulting engineer and national authority on steel structures, at a meeting in New York, Feb. 4.

Safety, accuracy of load resistance measurements, constant inspection during all processes of manufacture and construction, and economy, were cited by Dr. Hovey as factors favoring steel.

"Loads on dams are the most definite of any with which the civil engineer has to deal," Dr. Hovey declared. "Steel is made and rolled under full control. There is no uncertainty concerning the uniform quality of the material or in its application in the structure. A steel frame dam can be designed so that its principal members resist the water pressure in the most direct manner and with no uncertainty as to their action. The loads on the foundations are definite. Consistent factors of safety against overturning and sliding can be maintained."

Luncheon at Recent Convention of Institute of Scrap Iron & Steel

Snow and Storm Chill Auto Sales; Assemblies Fall Below 70,000

Consider Improvements for 1937; Rubber Springs May Battle Steel

DETROIT

WHILE of a different sort than the New Deal variety, a "breathing spell" still encompasses the automotive industry. Man-made to a certain degree but intensified by nature's whims, the current situation insofar as it affects production departments is one that calls for a temporary period of marking time.

This lull—and it is only a relative one—is confined to the manufacturing divisions, however, since designers are active on plans for the successors to current models, and sales departments are busy, as always. Despite efforts of the last-named group, dealers are fighting a losing battle with the elements. Snow and low temperatures have continued the weather man's forte and remain one of the principal reasons for the recent lag in car sales in a large section of the country.

Suppliers Await New Designs

New designs are well along in some instances, but in only a few cases have parts suppliers been called in to figure on such work. Since this coming year is labeled for more important changes in design than were adopted on current models, considerable jockeying is expected to develop among individual manufacturers in order not to permit anyone to steal a march on its competitors.

In the past such moves, on occasions, have resulted in feverish activity just prior to new model introductions, either because of revisions in design or because of difficulties in adapting new designs to high-speed production.

A few more orders in connection with new parts are commencing to trickle into die shops, but this department of the industry generally continues in its off season. The next few weeks will see the start of better activity.

What costs and quality are to the production manager, change is to the automotive designing engineer. Those who consider the present motor car as having reached a maturity where it will be affected by but few alterations in appearance or mechanical parts, reckon without the ideas of those who create the product. Henry Ford recently remarked that it will require about ten more years to refine the automobile to a point where it will be entirely satisfactory.

This would indicate a gradual, rather than a rapid, evolution. The changes might be rapid were it not for the fact that the motoring public revises its tastes slowly. A Chrysler Airflow today appears as one of the crowd in the matter of body lines, yet two years ago it was regarded by many as a freak. Engineers predict that what now is accepted as a modern car will seem equally freakish not many years hence.

This practice of moderate but steady change makes it seem probable that 1937 models will not be so different as to lack relationship to their immediate predecessors, but that distinguishing features will be noticeable. The aim of manufacturers toward the attainment of lower and more spacious bodies may be expected to continue, probably at the expense of running boards, if not to the exclusion of the forward location of the engine. Mark down the latter, however, as the next radical step in automotive design.

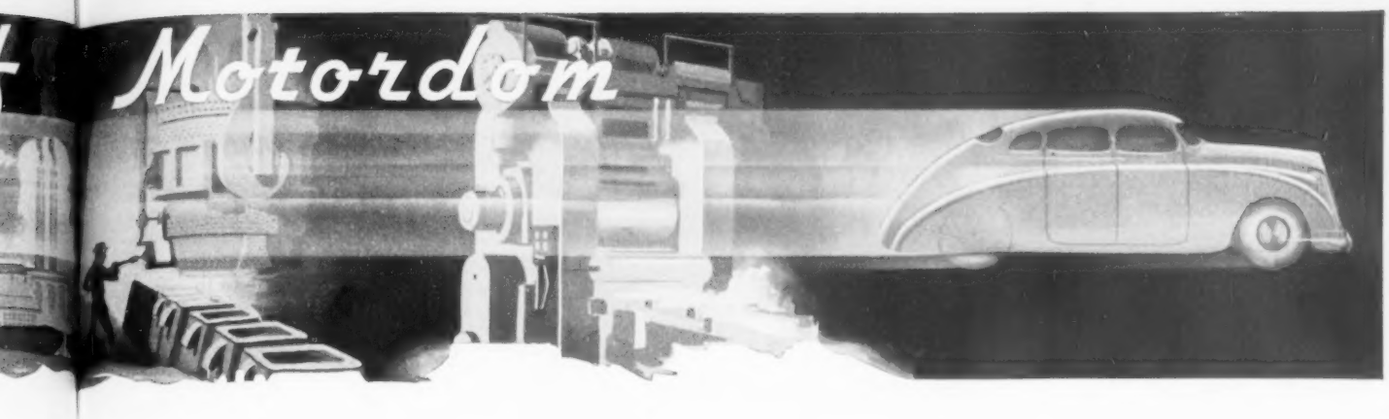
Motors are not being neglected for the study of other mechanical parts and riding qualities, though further progress in the improvement of power, economy and acceleration may be slower than that of the recent past. Ford's use of alloy steel pistons may indicate a trend from aluminum back to ferrous metal. Steering will continue to be made more effortless, with the next step toward increased ease of operation likely to be the elimination of the manual gearshift.

Springs To Go Rubber?

Somewhat disquieting to the steel industry and to the steel spring manufacturer is the promotion of rubber air springs by the Firestone Tire & Rubber Co. This spring, consisting of a rubberized fabric bellows, operates automatically in conjunction with an air reservoir. A pendulum shock absorption valve takes care of changes in spring pressure such as caused by road obstructions and the rounding of corners at high speed.

Softer riding qualities, elimination of body roll and quieter car operation are claimed for the product by the manufacturer. Whether rubber springs will add another chapter to the many written on automotive spring design the past few years is problematical, but it does indicate the lack of security of a product in this changing industry.

With caution still the watchword among manufacturers in adjusting their rate of assemblies, ordering of steel and some other materials is being done at close range. Frequently buying is for such a short distance ahead that mills are rushed to give



desired shipment. Steel releases as a whole are in steady volume and lack the downward trend that was noticeable a month ago. A relatively slow month is in prospect for February, though an upturn in March is a favorable prediction.

Irregularity continues among the production trends of various interests. Chevrolet, for instance, is understood to be planning only a small drop in turning out 100,000 units this month. Plymouth, away fast from the barrier last fall with its current models, has been accumulating finished cars and is expected to retrench further along with some of the other Chrysler units.

Material suppliers find it difficult to estimate the industry's probable requirements 30 days ahead because of the lack of fixed schedules. Variations in retail sales during coming weeks will have a major influence on production plans. February output will derive no benefit from Leap Year's extra day since the month includes five Saturdays, and operations generally have been restricted to four days or less weekly.

Stocks Are Expanding

Some look for minor changes in models this spring in the event retail buying does not come back as rapidly as is hoped for. Last year the industry had little occasion to inject this additional stimulus since sales continued strong and the period of life of 1935 models was shortened by advancing the shows to November.

While it is certain that registrations will increase with the approach of spring, actual operations seem likely to respond to a somewhat lesser degree since both parts and finished cars are being piled up in anticipation of the second quarter recovery.

Credit Chrysler with a smart move in the $2,300,000 Valentine it is presenting its 59,000 employes. Bettering General Motors' individual Christmas gifts by $5 to $25, it will benefit in return from the employe good-will and publicity attached to the bonus to say nothing of the several hundred thousand dollars saved on federal income taxes.

Sales departments are not letting the spectres of an old-fashioned winter and huge accumulations of used cars discourage them in their estimates of better business this year than in 1935. First reports for January show a gain over last year, though it is feared a similar margin will not be maintained through the remainder of the quarter.

The stock market, a factor of no small importance, for a number of weeks has been moving in a manner calculated to induce automobile buying, while dealers are beginning to get a favorable reaction from the veterans' bonus passage.

Some progress is being made in lightening the used car load which is impeding dealers' sales of new models. The problem is far from solved, however, and probably will not be until treated with spring's warming winds. Reporting success for its $20 bonus to dealers for the scrapping of cars taken in trade, Chevrolet has extended the plan through February. Sales of used cars by Chevrolet dealers from November to date total more than 315,000 units, a new record.

Talk is current of the likelihood of an attempt by steel producers to win back the $3 a ton lost on sheets a short time ago. An increase on second quarter business is the tentative prospect. While on occasions much is made of the pressure brought by auto manufacturers for lower steel prices, this last reduction, made at a time when demand was heavy, caused some chiding of the mills by the latter who, in general, were not expecting the cut. Automotive steel buyers now wonder what will happen when additional continuous mill capacity starts looking for sustenance.

Miscellaneous Auto News

General Motors improved its safety record materially last year. Its 72 plants worked 21 per cent more manhours than in 1934, yet the number of accidents to workers declined 24 per cent. The accident frequency rate dropped 38 per cent and the severity rate 35 per cent. . . . A Chevrolet 1½-ton truck recently hauled a semi-trailer with a 5-ton load from Los Angeles to New York at an operating cost of less than one-third cent per ton mile. . . . Mather Spring Co.'s Toledo plant has reopened following settlement of a strike which started Nov. 1. . . . Gabriel Co., Cleveland, plans a drive on the replacement market with a new hydraulic shock absorber. . . . Chevrolet's 24 manufacturing plants showed an average improvement of 47 per cent in their safety record last year. . . . Walter A. Olen, president and general manager, Four Wheel Drive Auto Co., Clintonville, Wis., predicts that the greatest concentration of engineering effort in 1936 will be devoted to the design of safer trucks and passenger cars.

Automobile Production

Passenger Cars and Trucks—U. S. Only
By Department of Commerce

	1933	1934	1935
Jan.	128,825	155,666	292,785
Feb.	105,447	230,256	335,667
Mar.	115,272	338,434	429,793
Apr.	176,432	352,975	477,691
May	214,411	330,455	364,662
June	249,727	306,477	361,248
July	229,357	264,933	336,985
Aug.	232,855	234,811	239,994
Sept.	191,800	170,007	89,804
Oct.	134,683	131,991	275,024
Nov.	60,683	83,482	398,039
Dec.	80,565	153,624	407,804
Year	1,920,057	2,753,111	4,009,496

Estimated by *Cram's Reports*

Week ended:	
Jan. 25	87,415
Feb. 1	85,790
Feb. 8	69,876

Production

STEELMAKING crossed 50 per cent last week, rising 3 points to 53 per cent. Heavier demand from railroads proved a factor in boosting schedules. In the major steelmaking districts, Chicago was up 6 to 58 per cent, Pittsburgh up 1 to 40 per cent, and Youngstown up 1 to 61 per cent. Other districts to show gains were Wheeling, Cleveland, Birmingham, and Cincinnati, while eastern Pennsylvania, New England, Buffalo and Detroit remained in a state of inertia.

Colorado Fuel & Iron Co., Denver and Pueblo, Colo., has increased its operating schedules and is now working six days a week, instead of on a five-day basis. It has also increased the working shifts at its various mills. Further details follow:

Youngstown—Gained 1 point last week to 61 per cent, and schedules are expected to hold at this level for this week. Resumption of a bessemer furnace served to offset a dip in open hearth output.

Chicago—Increased 6 points to 58 per cent, the best rate in seven weeks. Improvement in ingot production has been generally distributed, with heavier production of railroad material a factor in boosting schedules. Blast furnace operations are unchanged, with 19 of 41 stacks active.

Cleveland-Lorain — Increased 2½ points last week to 61½ per cent, Republic Steel Corp. operating 8 of its 14 open hearths, Otis Steel Co., 4 of 8, and National Tube Co. all 12.

Detroit—Unchanged at 88 per cent last week, local mills continuing to operate 15 out of 17 open hearths.

New England—Unchanged at 83 per cent, with expectation that this rate will be held this week.

Pittsburgh—Up 1 point to 40 per cent last week, due largely to an increase in operations by the leading interest which closed at 38 per cent. The leading independent's operations have advanced fractionally and are now at 47-48 per cent.

Twenty-seven steelworks blast furnaces out of 60 are active, a loss of one from the recent 1935-36 high. Carnegie-Illinois now has 11 of 32 on, having banked an Edgar Thomson furnace; Jones & Laughlin, 7 of 11; National Tube, 2 of 4 at McKeesport, Pa.; Bethlehem, 4 of 7 at Johnstown, Pa., and Pittsburgh Steel, Pittsburgh Crucible Steel, and American Steel & Wire, each 1 of 2.

Central eastern seaboard—Unchanged at 36½ per cent, with little early variation in prospect. Most producers look for little real improvement before March, although some believe that 40 per cent operations by the end of February are not unlikely. Adverse weather conditions have had a retarding effect on finished steel business in a number of lines, and any return to open weather should have a stimulating effect which, in turn, should be reflected in raw steel.

Buffalo—Remained ot 32 per cent for the third consecutive week, with expectations of an increase the latter part of this month. Twelve open hearths continue to make steel.

Wheeling—Up 3 points to 81 per cent last week. Thirty out of 37 open-hearth furnaces were operating compared with 29 the week preceding, and 26 two weeks previous.

Birmingham—Advanced 12 points to 63 per cent last week, and indications point to this rate holding at this level for about three months. Fourteen open-hearth furnaces are active, and two others are ready to resume on short notice. The rail mill of the Ensley works of the Tennessee Coal, Iron & Railroad Co. started in production the beginning of last week.

Cincinnati—Rose 5 points to 80 per cent, with the addition of one open hearth. Nineteen of 24 are now in operation.

Steelmaking Operations

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Feb. 8	Change	Same week 1935	Same week 1934
Pittsburgh	40	+ 1	44	21
Chicago	58	+ 6	67	37
Eastern Pa....	36½	None	31	24½
Youngstown...	61	+ 1	58	44
Wheeling	81	+ 3	90	69
Cleveland	61½	+ 2½	82	74
Buffalo	32	None	45	37
Birmingham...	63	+12	32	52
New England	83	None	63	82
Detroit	88	None	100	79
Cincinnati	80	+ 5	†	†
Average.....	53	+ 3	54½	39

†Not reported.

CANADIAN OUTPUT RISES

Production of steel ingots and castings in Canada in December, 1935, totaled 98,888 gross tons, an increase of 4814 tons over November, and putting the yearly total at 935,682 tons, as compared with 757,782 tons in 1934.

Output of pig iron aggregated 70,647 tons, against 64,562 tons in November, and 42,364 tons in December, 1934. Production for the year amounted to 599,794 tons, as compared with 404,995 tons in 1934.

Ferroalloys production remained practically unchanged in December, at 4688 tons, against 4693 tons for the previous month. However, output for the year was nearly doubled, at 56,901 tons, compared with 29,940 tons in 1934.

Steel Ingot Production

	Monthly Production—Complete for Bessemer; Open Hearth, Calculated from Reports of Companies Making 97.91 per cent						Calculated daily production, all companies (gross tons)	Number of working days
	—Open Hearth—		—Bessemer—		—Total—			
	Gross tons	Per cent of capacity	Gross tons	Per cent of capacity	Gross tons	Per cent of capacity		
1936								
Jan.	2,853,050	54.09	196,389	28.74	3,049,439	51.18	112,942	27
1935								
Jan.	2,631,673	49.73	239,858	34.99	2,871,531	48.04	106,353	27
Feb.	2,553,429	54.28	224,336	36.82	2,777,765	52.28	115,740	24
Mar.	2,637,331	51.75	230,810	34.97	2,868,141	49.83	110,313	26
Apr.	2,408,588	47.27	231,916	35.14	2,640,504	45.87	101,558	26
May	2,381,061	44.99	254,796	37.17	2,635,857	44.10	97,624	27
June	2,020,406	41.23	210,487	33.17	2,230,893	40.31	89,236	25
July	2,045,768	40.15	224,456	34.01	2,270,224	39.44	87,316	26
Aug.	2,685,965	50.76	233,361	34.05	2,919,326	48.84	108,123	27
Sept.	2,596,098	52.98	233,737	36.83	2,829,835	51.13	113,193	25
Oct.	2,875,727	54.34	270,719	39.50	3,146,446	52.64	116,535	27
Nov.	2,901,084	56.93	252,163	38.20	3,153,247	54.78	121,279	26
Dec.	2,833,382	58.23	228,425	35.99	3,081,807	55.68	123,272	25
Total	30,590,512	50.19	2,835,064	35.91	33,425,576	48.55	107,478	311

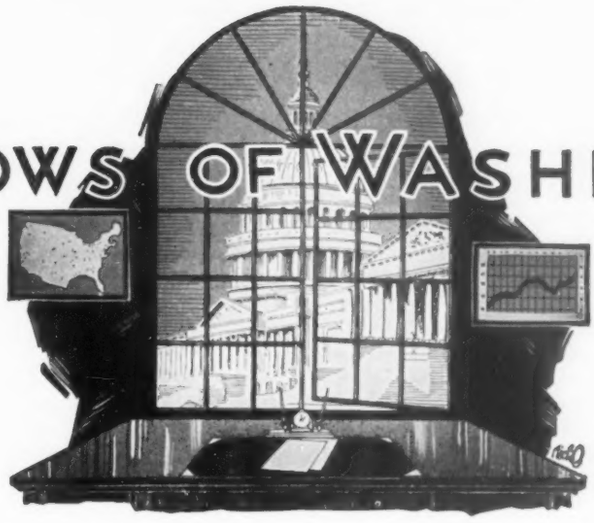
Capacity percentages are based upon open-hearth capacity of 60,954,717 tons and bessemer of 7,895,000 tons on Dec. 31, 1934.

January Ingots In Small Decline

PRODUCTION of steel ingots in January, as reported by the American Iron and Steel institute, was at the rate of 112,942 gross tons, compared with 123,272 tons in December, a decline of 10,330 tons, or 8.3 per cent. Per cent of capacity engaged in January was 51.18 per cent, compared with 55.68 per cent in December. Total calculated production in January was 3,049,439 gross tons, compared with 3,081,807 tons in December.

Compared with January, 1935, the past month shows a decided gain. The daily rate in January, 1935, was 106,353 gross tons, at 48.04 per cent of capacity and total production for the month was 2,871,531 gross tons.

WINDOWS OF WASHINGTON



WASHINGTON

THERE was plenty of action at the nation's capital last week. The New Dealers again were on the rack through the machinations of the Supreme Court. For the third successive week they anticipated a decision in the TVA case. They evidently do not have as good inside information from the court as some of them have been thinking.

William Green has two bad hours before the John Lewis coal miners; more talk of inflation on capitol hill; the new neutrality bill strikes a snag; the President clamps down on the White House news photographers for taking his picture in a "distressed" attitude, he was merely resting from flashlight blindness; et al.

No Change in Neutrality

There is every indication as this is written that the neutrality law, in which the steel industry certainly has a most important stake, will be renewed when it expires on the last day of February, very much as it is today.

There has been so much talk about the present law and so many objections to the administration bills as introduced that congressional leaders are about to capitulate and pass a bill simply extending the present act with one or two amendments. Those are certainly the indications at this time.

Senator Thomas, of Utah, last week pressed the foreign relations committee for action on his resolution (S.J. 198) to extend the present neutrality bill for another year. If he does not get any action from the committee he has threatened to carry his fight to the floor.

Senator Thomas did this, he said, because of lack of time to consider new legislation. He believes that if the congress is not careful it will find the country without any law sustaining the existing proclamations which cover the present Italo-Ethiopian situation.

Senator Thomas said that "to legislate a great fundamental American foreign policy at a time when feelings run high because of an existing emergency is unwise. * * * * Confusion in the public mind about the law of neutrality may result in our suffering from another great disillusionment. It is too much to expect to be made immune from war just by passing a law. In order to work, law must be built on custom."

Steel tonnage, of course, is derived to a great extent from many governmental activities, from appropriations made by congress. Some interesting figures have just been compiled here showing the appropriations which are likely to be made in which the steel industry has a direct interest.

Appropriations for the war department total $511,029,000, made up of $369,919,000 for direct military purposes and $141,110,000 for nonmilitary activities, including United States engineers and administration. Attention is called to the fact that in these appropriations, aside from building airports, etc., mechanization and motorization is included. It is believed that about 1000 tons of bullet proof steel will be needed for 200 tanks which it is expected will be authorized.

May Plan More Destroyers

The navy department requested appropriations of $567,872,400. In this connection it is reported that schedules will be brought out in July to include 12 destroyers and six submarines, with a chance that there might be 16 destroyers instead of 12.

The PWA requests include $884,000,000 divided as follows: administration, $15,000,000; completing Boulder dam, $9,000,000; loans and grants to municipalities, $325,000,000; federal highways, $236,000,000; rivers and harbors, $84,500,000; and other PWA allotments, including public buildings, $214,500,000.

The annual appropriations for other departments, it is expected will include $322,367,000. The relief appropriation is expected to amount to some $2,000,000,000, of which half of that is the unexpended balance from the $4,800,000,000.

The appropriations for the soldiers bonus is expected to be about $2,500,000,000 and it is estimated that between the coming July and December veterans will have converted their bonds into cash to the amount of about a billion dollars. Much of it to be spent for automobiles, which are largely steel.

MINE WORKERS SLAP GREEN, MAY ORGANIZE COKE WORKS

Those newsmen who make it their life's business to follow labor matters are of the opinion that during the past week President Green of the A. F. of L. took a real downward step.

Mr. Green addressed some 2000 delegates to the United Mine Workers' convention, which has been in session here for the past two weeks, and he made his address amidst boos and catcalls which nearly ended in a riot.

The correspondents who were nearest to the platform when Mr. Green finished his speech declared that his knees were shaking under him. He pleaded with and threatened the delegates in behalf of keeping the A. F. of L. as it is today.

When he finished his speech, Mr. Lewis asked how many of the delegates favored the Green plan, and three lone delegates arose. It is reported that as he sat down Mr. Lewis said, "Bill, why didn't you tell me what you were going to say?"

Mention was made in this column a short time ago that Mr. Lewis would finally win out in the fight between craft and vertical organization of labor, and light is certainly lent to

this by the happenings of the past week.

The mine workers were unanimous in turning down Mr. Green, but they were not in such accord in raising salaries of their officials. However, the opposition was mowed down, and Mr. Lewis now receives $25,000 a year instead of $12,000, and his two vice presidents were raised from $9000 to $18,000. Not large salaries, of course, considering that 300,000 mine workers pay $1 each a month in dues.

An early organization drive by Mr. Lewis may be at by-product coke works, which he has long regarded as an adjunct to coal mines. This may be the first thrust at the steel industry.

HOPE TRADE ASSOCIATION SUIT WILL BRING DEFINITIONS

The United States Supreme Court last week heard arguments in the appeal of the Sugar institute and others from the decree of a lower court involving the scope of trade associations under the antitrust laws. Four other national industrial associations intervened as "friends of the court," including the Cotton Textile institute, the Window Glass Manufacturers' association, the National Lumber Manufacturers association, and the Consumers Goods Industries Committee.

Hope was expressed during the course of the argument that, whatever decision the court may make, it will recognize the fundamental importance of dealing with destructive, discriminatory, and wasteful competitive practices; that where the fundamentals of active and effective competition are preserved, there should be wide lattitude for an industry to deal with such practices; and that measures for dealing with them effectively necessarily have to be broad and considered in the light of the practicalities of the situation.

TUGWELL'S HOUSES TAKE 80 TONS OF CONCRETE BARS EACH

Rexford Tugwell's resettlement administration has just awarded a contract to Joseph T. Ryerson & Son Inc. for 2500 tons of reinforcing bars at $108,800 to be used in the erection of some thirty concrete houses near Berwyn, Md., just outside of Washington.

Mention was made in this column last week that bids had been opened for this quantity of bars, and that Washington representatives of steel firms were unable to understand what the government would do with this quantity of bars in the erection of so few houses.

As a matter of fact, it was taken for granted that, the mistake having been found out, the resettlement organization would turn down the bids. To the amusement of representatives of the industry, the award was actually made.

Incidentally, it is reported on good authority that the Tugwell organization did learn that it had made a big mistake but rather than be laughed at it bought the entire quantity for which it had advertised. It is being laughed at, anyhow.

Bank Robbers Use Electric Arc To Burn Safe Door

INVESTIGATION of a recent bank robbery in Otwell, Ind., in which several thousand dollars were taken, indicates that the robbers employed electric arc welding equipment to burn off the safe door. Shortly after the crime was committed, authorities found the welding equipment, a truck owned by the Lindenschmidt Co., Evansville, Ind., abandoned on a nearby lonely road.

The truck, fitted with an arc welding generator manufactured by the Lincoln Electric Co., Cleveland, and driven direct from the truck engine through a power take-off, was not at first connected with the robbery. However, several empty money bags, reported found on the driver's seat, established the connection between the truck and the crime. Investigation revealed that the truck had been stolen a few days before the bank was entered.

Reconstructing the crime, authorities concluded the truck was driven near the bank, the controls set for driving the welding generator and the electric current carried by cable to the safe for burning off the door. It is believed the job could have been done by one man, although the safe cracker probably had an assistant who acted as look-out. Latest reports state the robbers have not been apprehended.

FEARS OVER MACHINERY SURVEY ARE ALLAYED

Reports current here are to the effect that the machinery industry does not have to be as apprehensive over the WPA survey of technological unemployment—discussed a couple of weeks ago—as it has been because those in charge apparently are going about the question in a sympathetic manner.

The machinery industry, the reports reaching here seem to indicate, was uneasy about this investigation. David Weintraub, the director of the survey, whose headquarters are in Philadelphia, was in Washington a few days ago and he explained that it is his intention to use to the greatest extent possible material already gathered by other government agencies.

During his conversation with government officials he is said to have given every evidence of wishing to be careful and sympathetic.

The machinery industry, it is said, has been trying for some time to obtain from the bureau of internal revenue a ruling to the effect that for the purpose of reviving the capital goods industry, buyers of machinery be allowed to subtract from taxable income in one year any money spent in that year on plant equipment. This has been allowed in several foreign countries, notably Germany.

The bureau of internal revenue is thought to be opposed to such action, and it would require an act of congress to get this consideration. The bureau is opposed to such action, doubting its efficacy and also feeling that no steps should be taken with regard to depreciation calculations which would tend to make the federal income from corporations fluctuate from year to year.

FATE OF BERRY COUNCIL TO BE DECIDED THIS WEEK

What—if anything—is to become of the Berry council for industrial progress will probably be decided this week at a meeting of the council.

The seven committees appointed by Major Berry to work out reports on certain subjects, already discussed in this column, were called to meet in Washington on Feb. 10. Just how long it will take the committees to complete their reports is not known, but possibly within a day or so the council itself will meet.

At the council meeting it will be decided just what is to be done with the reports made. Whether they will be sent direct to the President or to congress has not yet been determined.

Also, in the event that the reports have been completed it will then be up to the council to decide for itself whether its work is done or not. If it is found that its work has been completed, it would certainly be an "out" for Major Berry. He has been trying for a long time, it is reported, to find some way to back down on this defunct concern.

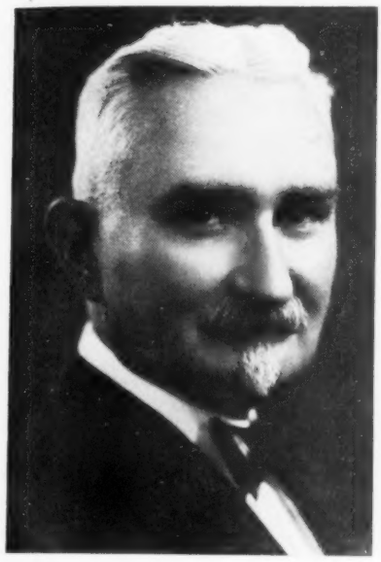
One thing is certain: Unless an appropriation can be obtained from some other quarter the Berry outfit will fold up its tent on April 1, for at that time the NRA automatically goes out of existence and the Berry adherents are on the NRA payroll. "No pay no work" will certainly be the attitude of the Berry crowd.

The question is being asked all along the line: Just what good in any form the Berry council has done, and after it has completed its work, what will become of it?

Men of Industry

JOHN HUGHES, assistant to the president, United States Steel Corp., New York, retired Feb. 1 under the Corporation's pension plan. Seventy years of age, Mr. Hughes has a record of nearly 58 years of employment, of which the past 32 years have been with the Corporation.

Since 1912, when he became assistant to the president, Mr. Hughes has had charge of matters relating to domestic and foreign tariffs on iron and steel products, and also supervised the handling of purchases of imported products, such as pig tin, palm oil, and other raw and semifinished materials, and the technicalities of conforming to customs regulations and practices in exporting the products of subsidiary companies.



John Hughes

Beginning his career in 1878, Mr. Hughes has held such posts as machine shop apprentice, junior clerk, bookkeeper, and clerk and examiner in the United States appraiser's office. In 1903 he became general agent of the United States Steel Products Co., New York, and remained in that position until his appointment as assistant to the president of the corporation.

On Jan. 31, his last day before retirement, Mr. Hughes was tendered a dinner by executives of the Corporation.

♦ ♦ ♦

Lester C. Klein has been appointed assistant to the president, United States Steel Corp., succeeding John Hughes, who, as noted above, retired Feb. 1. Mr. Klein has been an understudy of Mr. Hughes for many years and has an intimate knowledge of the responsibilities of his new office.

During the war Mr. Klein was trade adviser in charge of nonferrous metals, bureau of imports, war trade board, Washington, a bureau which granted import licenses to American users of foreign nonferrous metals and ores. In July, 1918, when Mr. Hughes, as chairman of the pig tin subcommittee of the war industries board, went abroad as a member of the board's mission to London and Paris, Mr. Klein was recalled to New York to act for Mr. Hughes during the latter's absence.

Mr. Klein was born in Brooklyn, N. Y., Sept. 25, 1886. On Feb. 12, 1904, he became identified with the United States Steel Products Co. as assistant to Mr. Hughes, then general agent of that company. He continued as assistant to Mr. Hughes when the latter became assistant to the president of the Corporation in 1912, and continued in that capacity until Feb. 1, when he succeeded to Mr. Hughes' post. Mr. Klein is a member of the American Tin Trade Association Inc. and the American Iron and Steel institute.

♦ ♦ ♦

Edward L. Ryerson Jr., president of Joseph T. Ryerson & Son Inc., Chicago, vice chairman of the board of Inland Steel Co., as well as president of the community chest, Chicago, addressed the eighth annual meeting of the Allegheny county, Pennsylvania, community fund in Hotel Schenley, Feb. 7. Mr. Ryerson has long been recognized as a leader in voluntary welfare work in the Middle West.

Paul F. Voight Jr.

Who as noted in STEEL of Feb. 3 as having been named manager of the newly-created stainless steel division of Carnegie-Illinois Steel Corp., has been closely connected with the commercial development of stainless steel the past 12 years

♦ ♦ ♦

Gilbert L. Lacher, as announced in STEEL for Feb. 3, has resigned as managing editor of *The Iron Age* to become editor of *United States Steel News*, to be published by the United States Steel Corp. This change was effective Feb. 1.

Mr. Lacher was graduated from the University of Wisconsin in 1914. His first journalistic experience was with a weekly newspaper in Wisconsin. He was associate editor of *The Railway Age*, Chicago, for a period of about four years. From February, 1919, to August, 1925, he was western editor of *The Iron Age* at Chicago, and from 1925 to 1930 he was associate editor in New York, after which time he served as managing editor.

Gilbert L. Lacher

♦ ♦ ♦

Andrew Grierson, formerly welding engineer, Kelvinator Corp., has joined the Detroit district sales office of P. R. Mallory & Co., as commercial welding engineer.

♦ ♦ ♦

G. N. Van Sweringen, recently assistant to the president, Chicago Railway Equipment Co., Chicago, has been made vice president in charge of sales, R. D. Bartlett succeeds him as assistant to the president.

♦ ♦ ♦

R. H. Sonneborn has been made special sales representative of the tubular division of the Republic Steel Corp., with headquarters in the Republic building, Cleveland. After being graduated from the University of Michigan, Mr. Sonneborn became associated with the Colorado Fuel & Iron Co. His affiliation with Repub-

lic follows ten years of experience with Youngstown Sheet & Tube Co. in the Detroit area.

♦ ♦ ♦

Charles W. East has been appointed district sales manager of the Republic Steel Corp. at Houston, Tex. Mr. East leaves his post as assistant manager of sales in Republic's pipe division at Birmingham, Ala., immediately to establish his headquarters in Houston. He succeeds Robert E. Lanier, who has resigned.

♦ ♦ ♦

Michael V. Bonomo, treasurer, Schiavone-Bonomo Corp., New York, recently was elected vice president of the Institute of Scrap Iron and Steel Inc. He has been engaged in the scrap iron business for 28 years. He joined the staff of L. Schiavone &

Michael V. Bonomo

Co. in 1918, and in 1921 formed a partnership with his brother Richard under the name of Bonomo Bros. In 1926 this firm merged with L. Schiavone & Co. under the name of L. Schiavone & Bonomo Bros., and in 1928 the Schiavone-Bonomo Corp. was organized.

♦ ♦ ♦

H. D. Farris, since 1922 active in the promotion and sales of cereal binders, has been appointed eastern sales representative of the Great Lakes Foundry Sand Co., Detroit.

♦ ♦ ♦

R. J. Fitness, for the past two years chief engineer of the Reo Motor Car Co., Lansing, Mich., has been appointed works manager. He will continue to supervise the engineering department as well as the manufacturing division.

♦ ♦ ♦

R. J. Wagner, formerly connected with the D. O. James Mfg. Co., Chicago, and H. H. Porter, formerly associated with the O. H. Dittmer Co., Milwaukee, have been added to the

Richard Shively

Recently promoted to purchasing agent of the Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., as noted in STEEL for Jan. 13. He has been identified with this department since February, 1922

Milwaukee sales force of the machinery & Welder Corp., Chicago, distributors for the Medart Co., St. Louis; Morse Chain Co., Ithaca, N. Y.; and the Conway Clutch Co., Cincinnati.

♦ ♦ ♦

C. Paul Clark, formerly general manager of Clark Bros. Co., Olean, N. Y., manufacturer of oil and gas engines, has been elected president, to succeed Joseph S. Reid, recently deceased.

Other appointments include F. H. Light as secretary-treasurer, and J. B. O'Connor as vice president.

♦ ♦ ♦

Neil Currie Jr., for the last six years manager of Philadelphia works of the General Electric Co., Schenectady, N. Y., has been made manager of the Fort Wayne works. He assumed his new duties Feb. 1. Mr. Currie succeeds Walter S. Goll who, although retiring as manager after 38 years of service, will continue with the company and will be available for special assignments. R. V. Good, formerly assistant manager at Philadelphia, has been appointed manager to succeed Mr. Currie.

♦ ♦ ♦

George Dandrow, for the last few years assistant manager of the New York district of the Johns-Manville Sales Corp., has been made manager of the power products and industrial department. He assumed his new duties Jan. 15.

Mr. Dandrow joined the Johns-Manville organization in 1922, directly following his graduation from the Massachusetts Institute of Technology. After five years in Johns-Manville's Boston branch, he joined the general engineering staff at headquarters in New York.

♦ ♦ ♦

Frank A. Schotters, vice president and treasurer, Luce Mfg. Co., Lansing, Mich., maker of Mastercraft truck bodies, has been elected president of the company. He will continue in the capacity of treasurer and general manager. Lee Richardson, Detroit, has been named vice president, and Carl H. Reynolds, secretary.

♦ ♦ ♦

John L. Young, formerly assistant general manager, industrial division, Timken Roller Bearing Co., Canton, O., has become affiliated with the service engineering department of the United Engineering & Foundry

G. Reed Schreiner

Who has been appointed assistant advertising manager of Carnegie-Illinois Steel Corp., as noted in STEEL for Jan. 6. He had been identified with the advertising department of the Carnegie company since January, 1919

Co., Pittsburgh. He joined the Timken organization in 1921, first in the mine car bearing field, and later had been in close touch with the development of rolling mill machinery. In 1931 he served Timken at Pittsburgh as development engineer specializing in steel mill equipment, becoming district manager of the Pittsburgh office in 1932. In 1934 he was transferred to Canton as assistant general manager of the industrial division.

♦ ♦ ♦

William C. Acklin has been elected president of the Acklin Stamping Co., Toledo, O., to fill the unexpired term of the late James Montgomery Acklin. He had been secretary of the company since 1911, and occupied the position of general manager since 1926.

George F. Medill, member of a

prominent Toledo law firm, has been elected secretary, succeeding Mr. Acklin. Other officers of the company are Frank E. Graper, first vice president and works manager; F. C. Greenhill, second vice president and sales manager; and A. E. Seeman, treasurer and assistant secretary.

♦ ♦ ♦

E. M. Barbour, formerly assistant general superintendent of the Pittsburg, Calif., plant of Columbia Steel Co., has been named general superintendent of the Torrance plant of the company. He succeeds B. W. Lantz, who resigned recently.

H. Stanley Worthington, formerly wire mill superintendent at Pittsburg, has succeeded Mr. Barbour.

♦ ♦ ♦

J. G. West Jr., assistant general manager of Jones & Laughlin Steel Corp., Pittsburgh has resigned. He has been engaged in the steel industry for his entire career, and since 1930 has been assistant manager at Jones & Laughlin in charge of blast furnace operations. Previously he had been identified with Illinois Steel Co., Carnegie Steel Co., and National Tube Co.

J. Z. Collier, assistant general manager for Jones & Laughlin Steel Corp., Pittsburgh, since 1929, has resigned. Mr. Collier has been identified with Jones & Laughlin since 1918, prior to which he was assistant general superintendent of Whitaker-Giessner Co., parent company of the present Wheeling Steel Corp. His previous affiliations included Central Alloy Steel Co. and Atlantic Steel Co.

S. S. Marshall, since 1929 general superintendent of the Pittsburgh works of Jones & Laughlin Steel Corp., is now assistant general manager. His 33-year career has been spent entirely with this company, first as a master mechanic and assistant superintendent at the Eliza works, assistant superintendent and general superintendent at the South Side works, and finally general superintendent of the Pittsburgh works.

H. D. Stark has been made general superintendent of the Pittsburgh works, succeeding Mr. Marshall. He had been assistant general superintendent since 1929. His career with this company dates from 1899, during which time he held such positions as shop superintendent and steelworks superintendent.

J. C. Murray, formerly assistant general superintendent at the North Side works of the company, has been made assistant general superintendent of the Pittsburgh Works. Mr. Murray is also president of the Eastern States Blast Furnace and Coke association.

J. H. Caylor, formerly superintendent of rolling mills at the South Side works, has been named assistant general superintendent of the Pittsburgh works.

W. J. Ballantyne, formerly superintendent of the South Side openhearth and bessemer department, has been named superintendent of steelworks and blooming mills at the Pittsburgh works.

W. H. Holt, formerly blooming mills superintendent of the South Side works now is assistant superintendent of steelworks and blooming mills at the Pittsburgh works.

James D. Stewart, formerly assistant superintendent of rolling mills at the Pittsburgh works, now is superintendent of rolling mills there.

Charles L. McGranahan, for past four years strip and sheet superintendent of Inland Steel Co., has been engaged by Jones & Laughlin to supervise construction of its new $25,000,000 strip-sheet mill, and to operate it when completed. Mr. McGranahan, from 1915 to 1931, was associated with American Sheet & Tin Plate Co., at Gary, Ind.

♦ ♦ ♦

William H. Nichols, vice president, Pittsburgh Rolls Corp., a subsidiary of Blaw-Knox Co., was honored at a dinner at the Pittsburgh Athletic association last week in commemoration of 50 years' service.

♦ ♦ ♦

L. A. Paddock, president, American Bridge Co., Pittsburgh, has been named president of Virginia Bridge Co., organized Feb. 1 to succeed Virginia Bridge & Iron Co. The latter was purchased recently by Tennessee Coal, Iron & Railroad Co., another subsidiary of United States Steel Corp.

♦ ♦ ♦

S. E. Hackett, president, Jones & Laughlin Steel Corp., Pittsburgh has been elected a director of the Lake Superior Iron Ore association, Cleveland, succeeding the late A. B. Shepherd, vice president of that corporation. R. C. Allen, vice president, Oglebay, Norton & Co., Cleveland, was re-elected president, and other officers were also re-elected.

Financial

YOUNGSTOWN SHEET & TUBE CO. reports a profit of $1,597,521 for 1935, after all charges, including depreciation and depletion, compared with a loss of $2,665,119 for 1934.

Gross income, after deducting charges for repairs and maintenance of plants and provisions for estimated federal income taxes, was $13,563,994. Profit before interest, depletion and depreciation was $11,694,045.

On Dec. 31 the company had cash government bonds and marketable securities totaling $8,080,129, and the ratio of current assets to current liabilities was 6.09 to 1.

CRUCIBLE NET TOPS MILLION

Crucible Steel Co. of America last week reported a 1935 net profit, after charges, of $1,268,176 compared with a net of only $75,157 for 1934. The company's operating rate at the end of the year was at the rate of $2,500,000 in profits annually.

INTERLAKE REPORTS PROFIT

Interlake Iron Corp. earned over $200,000 in the fourth quarter of 1935, its first quarterly profit since 1931, but for the entire year the loss is about $470,000, compared with a deficit of $683,764 in 1934.

Labor

ALL mines of the Cleveland-Cliffs Iron Co., on the Marquette range started operating on a four-day week basis, Feb. 1, benefitting approximately 1700 men.

"This schedule is not necessarily permanent," said S. R. Elliott, general manager of mines, "and later if conditions do not warrant a continuation working time will be decreased."

To avoid laying off men, each of

Annual Reports Continue To Show Increased Profits

All Figures Are Profit Except Where Asterisk Denotes a Loss

	1935	1934
Chain Belt Co., Milwaukee	$ 362,019	$ 209,997
American Steel Foundries, Chicago	116,692	245,365
Deere & Co., Moline, Ill.	6,105,452	379,734
W. B. Jarvis Co., Grand Rapids, Mich.	387,949	184,255
Harbison-Walker Refractories Co., Pittsburgh	1,804,941	1,247,461
Walworth Co., Boston	*277,052	*234,038
Buckeye Steel Casting Co., Columbus, O.	*167,134	191,198
Stewart-Warner Corp., Chicago	1,700,000	571,968
Electric Auto-Lite Corp., Toledo, O.	2,588,598	913,681
Consolidated Steel Corp., Ltd., Los Angeles	121,514	*62,046
Sivyer Steel Casting Co., Milwaukee	36,906	2,287
Jaeger Machine Co., Columbus, O.†	78,124	72,628
Crocker-Wheeler Electric Co., Ampere, N. J.	35,625	*47,631
Michigan Steel Tube Products Co., Detroit	403,239	86,616
Total preceding 14 companies	13,296,873	3,761,475
Total 11 companies reported in STEEL for Feb. 3, p. 22	13,000,789	2,189,464
Grand total 25 companies	26,297,662	5,950,939

†Year ended Nov. 30.

the crews in the six underground mines operated will work one night shift a week. This includes the Maas, Negaunee and Athens mines in Negaunee; the Cliffs shaft in Ishpeming, and the Lloyd, North Lake and Gardner Mackinaw in Gwinn. A considerable amount of advance stripping and drilling is being done at the Tilden open pit mine this winter, giving added employment.

The company in many instances has employed more men than actually needed in production of ore during the last few years, carrying an excess of workers on surface work and in shops to aid the employment situation.

A heavy vote was cast in recent elections for employes' representatives, the vote in many cases running as high as 90 to 100 per cent of the personnel at the mines, an indication of satisfaction with the manner in which the employes' councils are operating.

COST OF LIVING GOES UP

Cost of living of wage earners rose in December when the purchasing value of the dollar was 117.9 on the basis of 1923 equalling 100, according to the National Industrial Conference board, New York. In November this index stood at 118.6.

Safety

NOT one fatal accident from an occupational cause was suffered by a General Electric Co. employe during 1935. Apparently, safety consciousness, instilled at work, carries on after the whistle blows, for among the company's employes there were the fewest number of non-occupational accidental deaths for any year on record—16, or 7 less than in 1934.

Died:

WILLIAM M. McFATE, 42, member of the staff of the American Iron and Steel institute, New York, in that city, Feb. 1. Mr. McFate was born in Youngstown, O. His career with the steel industry began in 1912, when he became associated with the Trumbull Steel Co., Warren, O., of which he became vice president in charge of sales. He later became affiliated with the Weirton Steel Co., Weirton, W. Va.; Detroit Steel Corp., Detroit; Wheeling Steel Corp., Wheeling, W. Va.; and the Youngstown Sheet & Tube Co., Youngstown, O. Mr. McFate joined the staff of the Institute in 1934 to assist in the administration of the steel code.

♦ ♦ ♦

John Henley, 58, vice president of the Chicago Extruded Metals Co., Chicago, in that city, Jan. 30.

♦ ♦ ♦

William B. Ross, 71, president of the Edwin S. Woods Railway Supply Co., Chicago, in that city, Feb. 2.

♦ ♦ ♦

Harry Lawrence Smith, 58, secretary-treasurer of the Smith System Heating Co., Minneapolis, manufacturer of heating equipment for schools, in that city recently.

♦ ♦ ♦

Richard R. Quay, 72, prominent in the organization of the Monongahela Tin Plate Co. in the early eighties, which later became American Sheet & Tin Plate Co., at Pittsburgh recently.

♦ ♦ ♦

Edwin W. Goeser, 53, vice-president and production manager of the Emsco Derrick & Equipment Co., Los Angeles, in that city, Jan. 28. He was formerly associated with the Union Tool Co., and the Pacific Electric Railway Co.

♦ ♦ ♦

Percival Hunter, 61, chief purchasing agent of the Chicago, Burlington & Quincy railroad, in Chicago, Feb. 3. Mr. Hunter had been associated with the road since 1903, and had been head of the purchasing division since 1931.

♦ ♦ ♦

John M. Adams, general superintendent, Wyckoff Drawn Steel Co., Ambridge, Pa., and associated with the firm for the past 11 years, at Glen Osborne, Pa., Feb. 3. He was a member of the Edgeworth club, Ambridge country club, and the Ambridge board of trade.

♦ ♦ ♦

Frederick A. Lange Sr., 72, founder of the Crucible Steel Casting Co., Milwaukee, and later the South Side Malleable Casting Co., which is now inactive, Feb. 2. He joined with the late Charles Maynard in 1893 to found the Crucible plant, becoming sole owner in 1903. The South Side plant was established in 1906. Retiring in 1924, he turned over active direction of the plants to his sons, Albert C., Walter W., and F. A. Lange Jr.

♦ ♦ ♦

William Dunbar McElhinny, 48, manager of the wholesale department of Frigidaire division of General Motors Corp., Dayton, O., in Dayton, Feb. 1. He was educated in Pennsylvania preparatory schools, and in the Universities of Louisville and Kentucky. Practically his entire business career was spent with Frigidaire, with the exception of several years, when he served as vice president of Copeland Products Inc., Detroit.

♦ ♦ ♦

Otto G. Schultz, 79, treasurer of the former Schultz Bridge & Iron Works, McKees Rocks, Pa., at Morristown, N. J., Jan. 31.

♦ ♦ ♦

Robert Mitchell, 50, for many years chief designer for the Steel Co. of Canada Ltd., Hamilton, Ont., in that city recently.

♦ ♦ ♦

Joseph W. Marsh, 78, vice chairman of the board of General Cable Corp., at Pittsburgh, Jan. 31. He was a director of both the Westinghouse Electric & Mfg. Co. and the Westinghouse Electric International Co. He was born in New York city, went to Pittsburgh in 1881, and first became secretary to the founder of the Standard Underground Cable Co. Subsequently he became president of the company shortly before it was merged with the General Cable Corp. several years ago. He was the author of "A Handbook on Wires and Cables."

♦ ♦ ♦

Alexander England, 69, retired chief engineer of Westinghouse Air Brake Co., Wilmerding, Pa., at Wilkinsburg, Pa., Jan. 30. Born in Dundee, Scotland, he came to United States in 1887, and settled in Pittsburgh, where he became assistant superintendent of Thomas Carlin's Sons, manufacturers of hoisting engines and brick plant machinery. When this firm was merged with the Specialty Mfg. Co., he was made superintendent. Several years later he was employed by Jones & Laughlin Steel Corp., to assist in the reconstruction of the Eliza furnace division. He went with Westinghouse Air Brake Co. in 1898, in 1914 was made assistant chief engineer, and in 1921 became chief engineer. He retired Jan. 1, 1933.

♦ ♦ ♦

Herbert F. Perkins, 71, former president of International Harvester Co., Chicago, in Ojai, Calif., Feb. 1. Mr. Perkins was graduated from Yale university in 1887, and became associated with the McCormick Harvester Co., Chicago, in 1899. He continued with this company's successor, International Harvester Co., and served as first vice president from 1928 until 1929. He then succeeded Alexander Legge as president, holding this position until 1931 when he retired. Mr. Perkins also was a former president of the Wisconsin Steel Works, Chicago, subsidiary of the International Harvester Co. During the war, Mr. Perkins was advisor to the chairman of the war labor policy board, and in 1928 was elected vice chairman of the National Industrial Conference board.

Kelvinator Corp., Detroit, booked orders for Kelvinator household refrigerators amounting to $12,500,000 at retail value for shipment during the January quarter, at its recent sales convention.

Editorial

Turnover in Business Shows Need of Good Management

PROBABLY no where in the world is the average life of a business enterprise as short as in the United States. The ease with which one or more individuals can start a company, the inexperience and lack of ability of many who launch new businesses, the sharp competition in many lines of activity and the apparent inability of many concerns to perpetuate efficient management over a long period of years make for a turnover of business enterprises that is appalling.

Many persons look to the record of commercial failures as a measure of business mortality. This is a misleading guide, because the number of concerns which fail represents only a small fraction of the total number of companies which actually discontinue business activity. As a matter of fact, for every company which goes bankrupt and is forced out of business, 15 companies retire voluntarily without loss to outsiders.

Therefore to ascertain the actual turnover in business it is necessary to count not only the forced retirements, which are recorded in the familiar statistics of failures, but also the voluntary discontinuances, which ordinarily receive little, if any, publicity.

Average of One-Fifth of All Companies in Business Retire from Activity Annually

In a recent issue of the *Dun & Bradstreet Monthly Review*, Roy A. Foulke, manager, analytical report department, Dun & Bradstreet, Inc., presented figures which show discontinuances of both kinds. The following table is adapted from his data:

	Concerns in Business	New Concerns	Voluntary Retirements	Forced Retirements	Total Retirements
1930	2,183,008	422,868	424,543	26,355	450,898
1931	2,125,288	355,452	334,271	28,285	362,556
1932	2,076,580	338,272	400,862	31,822	432,684
1933	1,960,700	344,907	366,055	20,487	386,542
1934	1,973,900	378,680	347,379	12,185	359,564
Total	10,319,476	1,840,179	1,873,110	119,134	1,992,244
5-year ave.	2,063,895	368,036	374,622	23,827	398,449
Per cent	.....	17.8	18.1	1.2	19.3

The most striking feature of these figures is that an average of 19.3 per cent of all companies discontinued business in each of the five years from 1930 to 1934 inclusive. Mr. Foulke points out that this is equivalent to saying that the "active life of the average enterprise which was liquidated from one cause or another during this period was approximately five and one-half years."

Another significant aspect of the figures is the surprisingly large number of new companies formed during the five-year period. Even in 1932 and 1933—during the most acute stages of the depression—the prospect of engaging in new business enterprises looked so attractive to many individuals that they were launching new concerns at the rate of more than a third of a million annually.

One cannot look at these figures of births and deaths in business without realizing that opportunity and responsibility are major factors in the evolution of the industrial and commercial structure of this country. That so many new companies can be organized in a period of unprecedented distress is proof that abundant opportunities exist. That so many enterprises fade from the picture each year is evidence of the inability of many entrepreneurs to bear the responsibility of good management.

Management Can Falter and Disintegrate in Good Times As Readily As in Hard Times

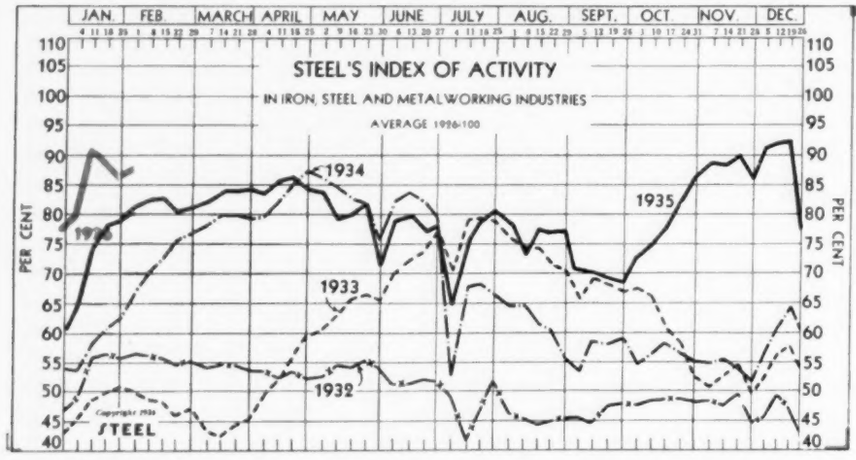
Strangely enough, the degree of opportunity and responsibility does not seem to be affected by good or bad times as much as one would expect. Mr. Foulke's figures for new concerns in the years of 1915, 1920 and 1925 were 22.7, 25.2 and 23.5 per cent, respectively, of the total number of concerns in business in those years. These are somewhat higher than the 17.8 per cent during the five-year period. However, discontinuances in 1915, 1920 and 1925 were 20.9, 19.0 and 20.5 per cent, respectively. These are in line with the five-year average of 19.3.

In view of these comparisons, it would seem that a depression is not a valid excuse for business failure. Probably the executives of many companies which went under in recent years ascribe their difficulties to "hard times," whereas in truth their downfall was caused by poor management.

Conversely, many exexcutives today may be thinking that their task of administration will be made easier by the return of better times. This is a dangerous view to take. The figures show that management can go sour in periods of activity just as in times of adversity.

Obviously the moral of the vital statistics of business is, "Be alert to maintain and perpetuate management at a high state of efficiency."

THE BUSINESS TREND



STEEL's *index of activity in the iron, steel and metalworking industries gained 0.6 points to 86.6 in the week ending Feb. 1:*

Week ending	1935	1934	1933	1932
Dec. 7	91.7	56.8	52.6	46.6
Dec. 14	91.8	60.6	56.0	49.3
Dec. 21	91.9	64.4	58.0	46.9
Dec. 28	77.3	60.8	53.7	42.8
	1936	1935	1934	1933
Jan. 4	78.2	65.4	53.6	45.3
Jan. 11	90.2	73.8	58.1	48.6
Jan. 18	89.3	78.1	60.9	49.8
Jan. 25	86.0†	79.5	62.3	50.8
Feb. 1	86.6*	81.8	66.9	49.9

†Revised *Preliminary.

The index charted above is based upon freight car loadings, electric power output, automobile assemblies (estimated by Cram's Reports) and the steelworks operating rate (estimated by STEEL). Average for 1926 equals 100, weighted as follows: Steel rate 40, and car loadings, power output and auto assemblies each 20.

Downward Tendency in Activity Has Been Checked

THE moderate downward swing in industrial activity, which was apparent during several weeks in January, has been checked. STEEL's index for the week ending Feb. 1 stands at 86.6, a gain of .6 from the preceding week.

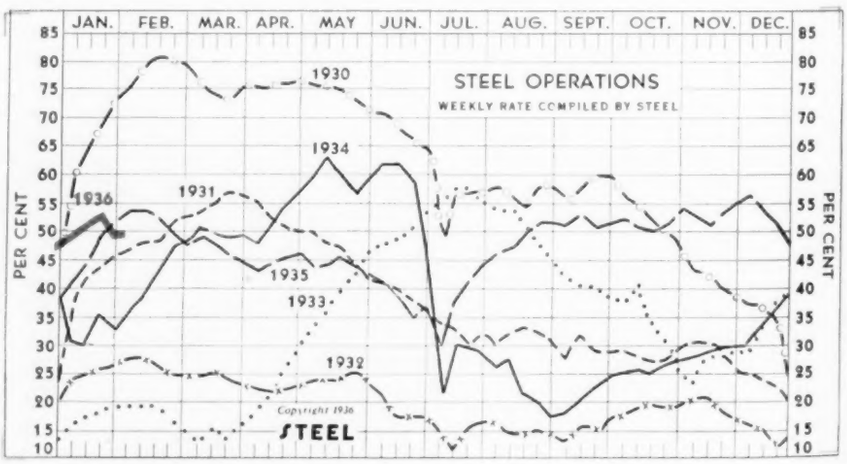
Contributing factors to this halting of the decline were a strong recovery in revenue freight car loadings, a substantial gain in electric power output, steadiness in steelworks operations and a more moderate easing off in automobile assemblies. Severe weather undoubtedly was an influence upon all four barometers.

The outlook is encouraging in many aspects. Demand for most commodities is expanding slightly. Money is flowing more freely into plant expansion, equipment, building construction, etc. This movement is particularly significant because it tends to restore activity to industries which suffered most acutely during the depression and thus it helps to broaden the base of industrial operations. This progress also is reflected in the long-term figures on employment, which show substantial gains in employment in 1933, 1934 and 1935.

Payment of the soldiers' bonus is bound to stimulate the demand for certain goods in the spring and summer months. At least part of this impetus will be felt in industry. If, as is expected, the low point in automobile production occurs in the month of February, then the influence of bonus money will be felt by the motor car industry at a time when production is expanding from other causes. This may produce an abnormal peak sometime in the late spring or early summer.

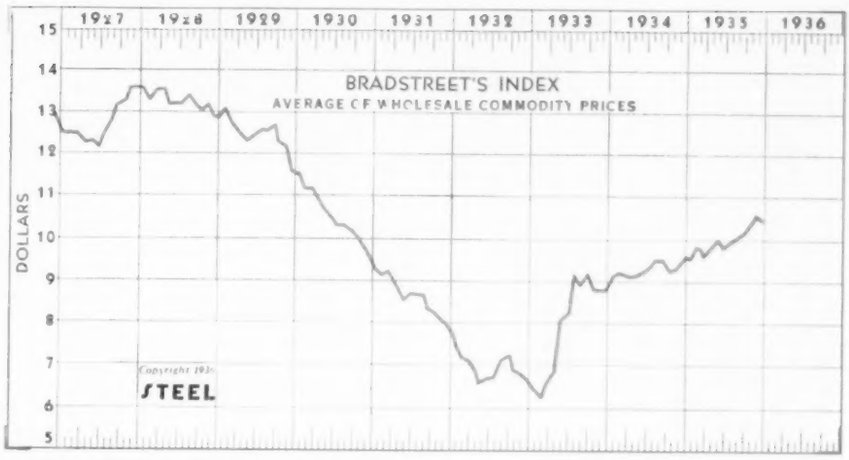
Since the trend in automobiles is a strong factor in industrial activity generally, we may expect minor fluctuations or possibly a slight letdown in the near future, followed by an expansion of activity.

	1936	1935	1934
Feb. 1	50	54.5	36
Jan. 25	50	53	33
Jan. 18	52.5	51	35
Jan. 11	51.5	45.5	30
Jan. 4	49.5	42.5	31
	1935	1934	1933
Dec. 28	48	39	36
Dec. 21	52	37.5	38
Dec. 14	54.5	33.5	33
Dec. 7	57	30	29



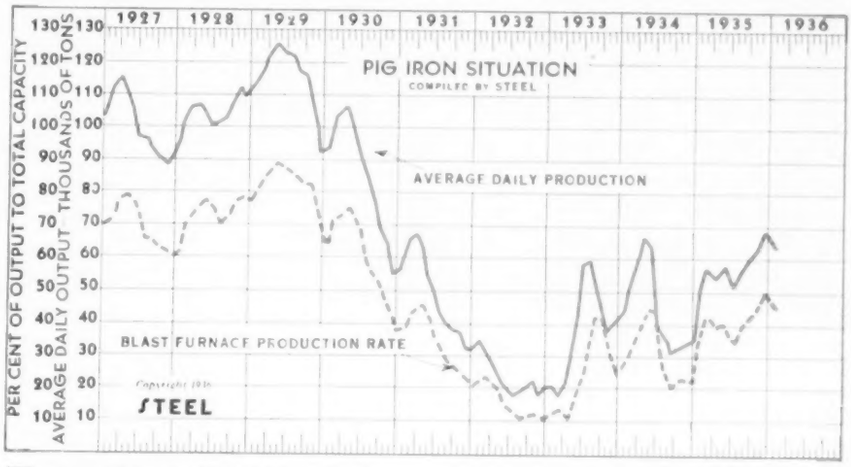
January 1 Commodity Price Index Declines Slightly

	1936	1935	1934	1933
Jan. 1	$10.36	$9.49	$9.01	$6.53
Feb. 1	.....	9.78	9.26	6.35
Mar. 1	.....	9.79	9.17	6.54
Apr. 1	.....	9.66	9.16	6.98
May 1	.....	9.79	9.14	8.02
June 1	.....	9.90	9.24	8.34
July 1	.....	9.84	9.32	9.01
Aug. 1	.....	9.91	9.48	8.99
Sept. 1	.....	10.00	9.45	9.05
Oct. 1	.....	10.17	9.27	8.84
Nov. 1	.....	10.28	9.20	8.81
Dec. 1	.....	10.40	9.49	8.83



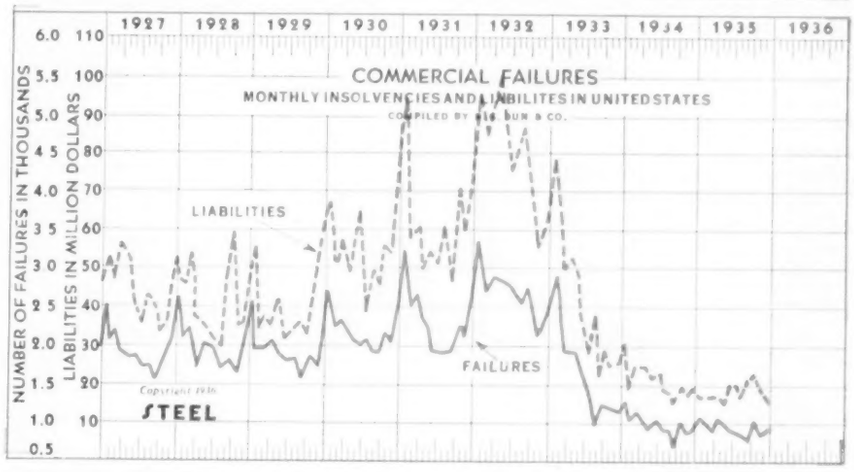
Pig Iron Production Down 4 Per Cent in January

	Daily Average, Tons		Blast Furnace Rate, Per Cent	
	1936	1935	1936	1935
Jan.	65,445	47,692	46.9	34.2
Feb.	.....	57,675	.....	41.4
Mar.	.....	57,120	.....	41.0
Apr.	.....	55,719	.....	40.0
May	.....	55,986	.....	40.2
June	.....	51,949	.....	37.2
July	.....	49,043	.....	35.2
Aug.	.....	56,767	.....	40.7
Sept.	.....	59,009	.....	42.5
Oct.	.....	63,818	.....	45.8
Nov.	.....	68,876	.....	49.5
Dec.	.....	68,242	.....	49.0


1927 1928 1929 1930 1931 1932 1933 1934 1935 1936
PIG IRON SITUATION
COMPILED BY STEEL
AVERAGE DAILY PRODUCTION
BLAST FURNACE PRODUCTION RATE
PER CENT OF OUTPUT TO TOTAL CAPACITY
AVERAGE DAILY OUTPUT THOUSANDS OF TONS
STEEL

1935 Commercial Failures Lowest Since 1920

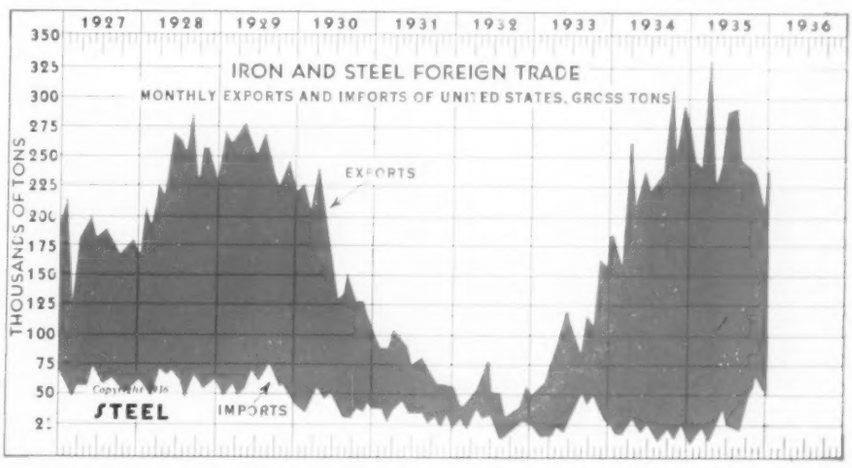
	Failures, Number		Liabilities, Dollars (000 omitted)	
	1935	1934	1935	1934
Jan.	1,184	1,364	$18,823	$32,905
Feb.	1,005	1,049	18,737	19,444
Mar.	976	1,102	18,522	25,786
Apr.	1,115	1,052	18,063	25,786
May	1,027	977	15,669	22,560
June	961	1,033	20,463	23,868
July	931	912	20,446	19,325
Aug.	910	929	17,845	18,459
Sept.	806	790	21,837	16,440
Oct.	1,097	1,091	22,243	19,968
Nov.	927	923	20,023	18,349
Dec.	940	963	17,442	19,910

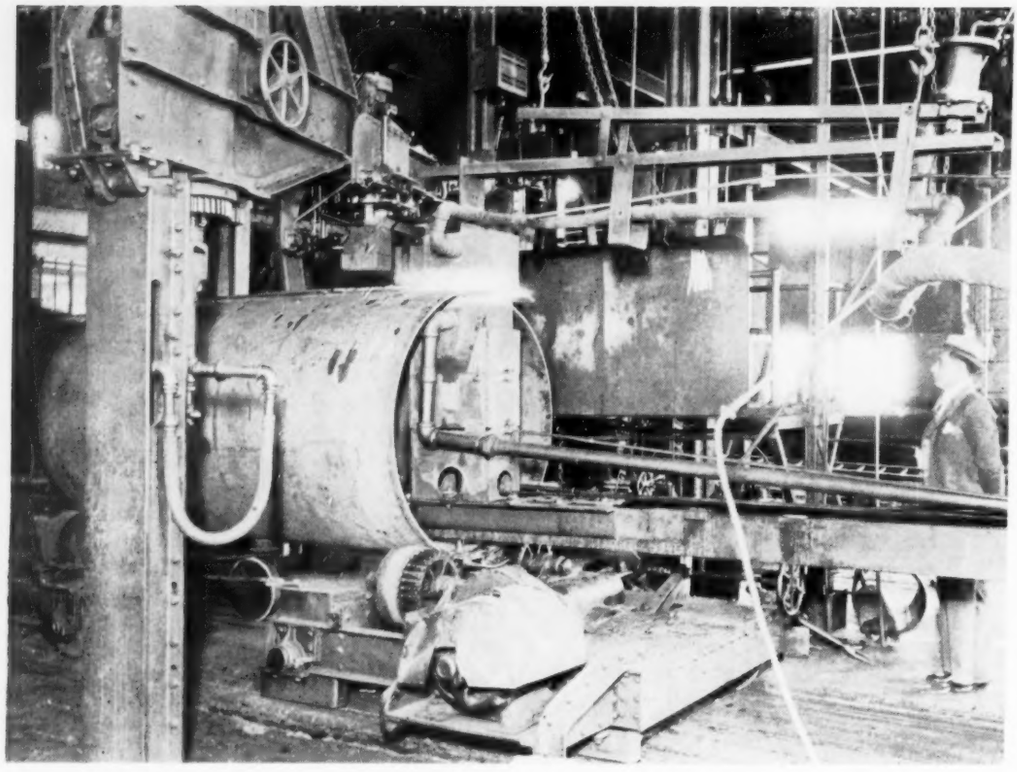

1927 1928 1929 1930 1931 1932 1933 1934 1935 1936
COMMERCIAL FAILURES
MONTHLY INSOLVENCIES AND LIABILITIES IN UNITED STATES
COMPILED BY R. G. DUN & CO.
LIABILITIES
FAILURES
NUMBER OF FAILURES IN THOUSANDS
LIABILITIES IN MILLION DOLLARS
STEEL

1935 Steel Exports Establish New Post War Record

Gross Tons

	1935		1934	
	Imports	Exports	Imports	Exports
Jan.	22,784	262,740	22,653	178,023
Feb.	28,905	228,537	25,407	151,184
Mar.	21,409	323,035	38,393	261,260
April	28,866	205,336	26,862	201,539
May	47,719	286,598	29,465	241,753
June	33,208	289,687	24,848	219,406
July	31,894	296,802	17,676	233,186
Aug.	31,312	247,312	32,418	242,947
Sept.	53,158	244,419	23,847	301,330
Oct.	59,569	238,358	22,202	220,209
Nov.	.....	.....	35,272	299,263
Dec.	53,678	239,268	19,708	282,655


1927 1928 1929 1930 1931 1932 1933 1934 1935 1936
IRON AND STEEL FOREIGN TRADE
MONTHLY EXPORTS AND IMPORTS OF UNITED STATES, GROSS TONS
EXPORTS
IMPORTS
THOUSANDS OF TONS
STEEL



HAMMER welder with gas furnaces in place, heating lapped metal edges preparatory to hammering

FORGE welding, originally the blacksmith method of permanently joining metals by hammering them together when hot, has been modernized and mechanized in recent years. Fusion welding (gas, electric arc, or thermit) entails the deposition of metal at temperatures above 4000 degrees Fahr., while forge welding is accomplished at temperatures between 2600 and 2800 degrees Fahr. The coal or coke fired forge and manual labor have been replaced with delicately controlled gas furnaces and power driven hammers and rolls. Forge welding steam and pneumatic hammers was a natural step from the manual method, while the use of rolls or hammers is a comparatively recent development.

Water gas and natural gas long have been employed as heating agents. Until recent years, the bureau of explosives, the interstate commerce commission, and the American Association of Railroads recognized only water gas as the heating medium for the manufacture of pressure vessels listed under their respective jurisdictions. However, investigation and tests have proved forge welds completed with transmutated natural gas are equivalent if not superior to those completed by using water gas as the heating medium, and the specifications have been altered so as to permit approval of welding completed by this process. The A.S.M.E. boiler construction code, paragraph U-85, section 8, states: "The heating agent shall be suitably prepared water gas or other heating medium by which equivalent or superior results will be obtained."

The theoretical flame temperatures of blue water gas vary from 3575 degrees Fahr. when made with bituminous coal to 3800 degrees Fahr. when made with anthracite coal, while that of natural gas (1090 B.t.u.) is 3600 degrees Fahr. constantly. In order to bring the steel to be forged welded to the proper plastic state, it must be soaked to assure heat penetration, at a temperature of 2700 degrees Fahr. Water gas produces a high velocity, fast heating flame which tends to

BY J. B. NEALEY

bring the surface of the steel up to the plastic state quickly while the core or center of the steel is comparatively cool with the result that a perfect weld can not be accomplished without delicate manipulations in order to avoid over heated metal.

On the other hand, natural gas affords a slow burning flame which makes soaking possible with an even distribution of heat throughout the cross-sectional area of the steel to be welded. In ther words, if the metal is heated too fast, the surface may be at a welding temperature while the inside or core of the steel is still considerably below the welding temperature, resulting in a defective weld. If heated slowly by soaking until there is absolute temperature equalization between the interior and exterior of the metal, the weld is successful and proper grain structure is attained. Of course, the tendency described for water gas may be overcome with manipulations and is mentioned only to bring out the comparative ease with which natural gas is utilized.

The Columbiana Boiler Co., Columbiana, O., manufacturer of pressure vessels, tanks for tank cars, acid tanks,tin pots for tin plate mills, galvanizing kettles, annealing boxes for steel mills and the like, uses transmutated natural gas for forge welding. The company has been using this fuel successfully for many years.

For welding of many of its products, the company uses natural gas in its natural state but, in order to conform to various regulations, on other items it converts the natural gas to blue water gas by proportioning with steam, with the result the products of combustion are identical with those obtained when using water gas alone and contain 45 to 55 per cent hydrogen. In this way water gas is produced at less cost than by burning coal.

John Barrow and his four sons are the principal officials of the company. They have designed and patented forge welding machines in-

Mechanized Forge Welding of Tanks

cluding equipment for hammer and roll welding. The hammer welding machines are used in making the longitudinal seams of pressure vessels as well as circumferential seams, except head seams, which are accomplished on roll and hammer welders. The hammer welder consists of a long steel mandrel on which the anvil or bucker-up and the lower forge ride back and forth. Below is a track on which rides a carriage carrying the tank or vessel to be welded, as shown in one of the illustrations.

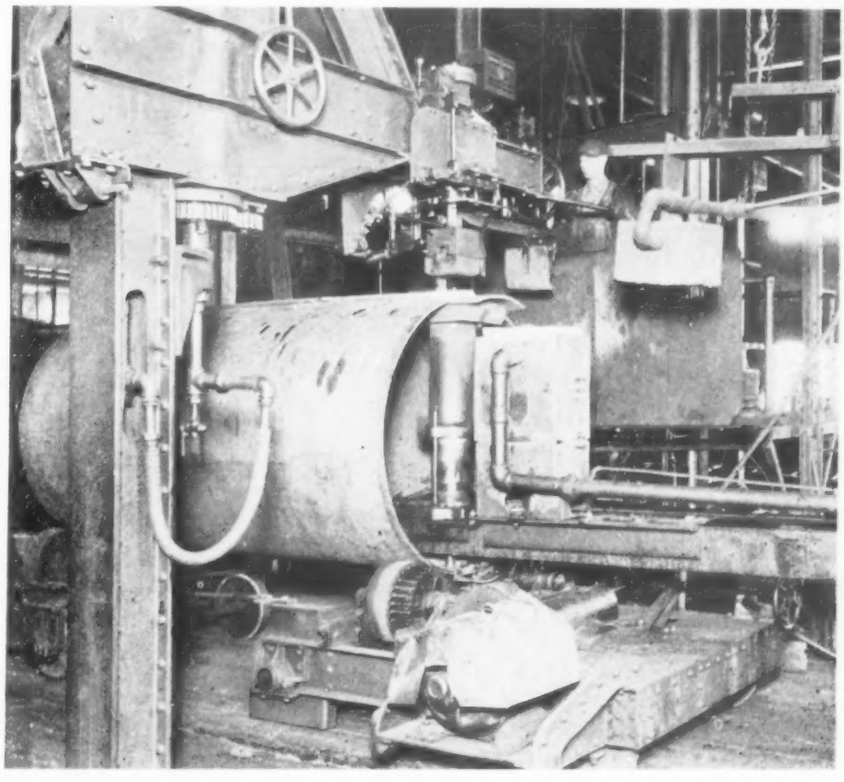
The shell plates for tank cars average 1 inch thickness and are of medium carbon steel formed into cylindrical shape in a pyramid roll capable of handling plates of any practical length. They are then stitch welded to form a shell section which is transferred by crane to the welding carriage and run into welding position. Rollers on the carriage in which the shell rests permit movement of the shell in any direction. This work is accomplished mechanically by remote controls located in the operator's pulpit. After the carriage and shell come to rest under the welder, the forges are positioned on the seam to be welded, one above and outside and the other below and inside of the shell. The hammer is swung from a post crane and can be moved horizontally in an arc or vertically.

Heating Lapped Edges

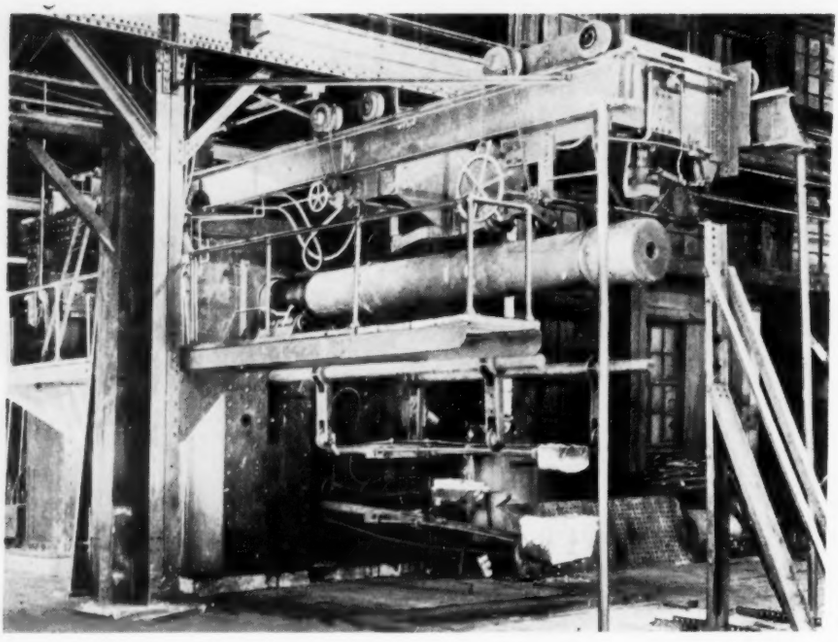
The outside or upper forge is handled by an overhead hoist and a section of flexible hose is inserted in all lines to allow free movement of both furnaces. The carriage in which the shell section rests is motor driven so that the movement of the shell to any position is a simple matter. This work is handled by one motor on the carriage controlled from the operator's pulpit.

The forges consist of steel cases filled with refractory material with an opening of approximately 5 by 10 inches. A gas burner fires into this combustion space and when the two forges are in position, the flames impinge directly against the shell, one above and one below. When the heat has been applied for a sufficient length of time, the operator by pushing a button moves the forges away and at the same time, the anvil and hammer slide and swing into position respectively. The operator then starts the hammer and at the same time moves the carriage and shell reciprocally until the weld is accomplished. The lap is reduced to the thickness of one plate. Another section of the seam is then heated and the process repeated until the entire seam is welded. Only about 12 inches of the seam is heated and welded at a time and the process is repeated several times so that from six to ten hours is required to complete the seam, depending upon the length and thickness of the material.

The sections then are welded together. The roller welder is used in joining the heads to the completed circular section. From two to six sections are required for one tank. The ends of each alternate section are flared in a gas fired furnace and pressed to allow the end of the next



HAMMER welder with furnaces pulled forward and hammer and anvil in position for hammering or forging the lapped edges of a tank shell



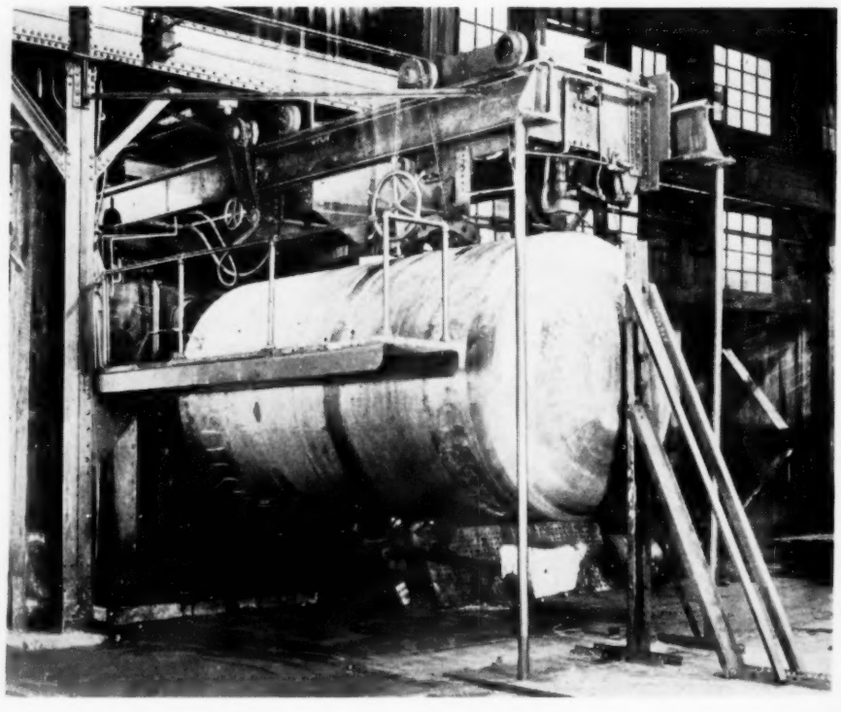
ROLLER welder, showing mandrel, pneumatic hammer and gas-fired forges

section to slide into it just far enough to form the required lap.

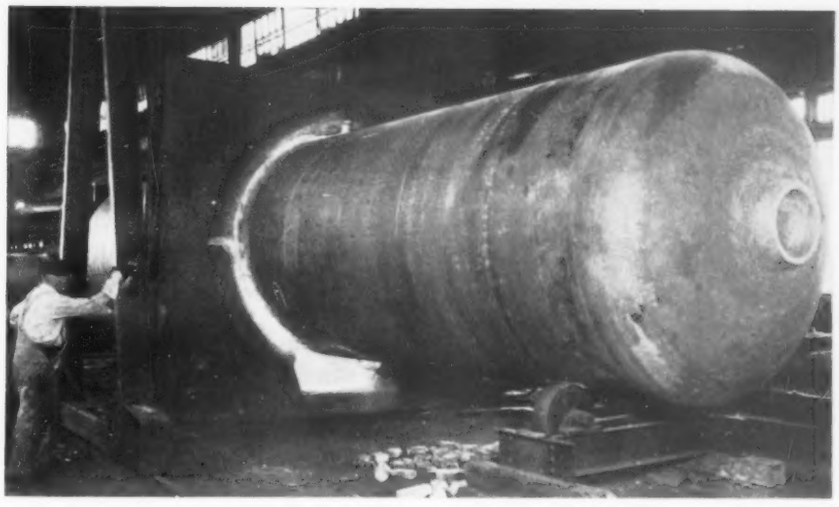
The patented roller welder has an overhead steel platform with rails and a carriage from which the pneumatic hammer and hold-down devices are suspended, operating back and forth by motor with remote control. Just below is a steel roll and mandrel over which the shell section rides and which serves as an anvil while the hammer is making the weld. The two gas fired forges on long steel supports are just far enough below the mandrel to straddle the lower portion of the shell wall. Rollers on arms inside the shell section hold the shell in position while it is rotated and welded. Air pressure on the hammers is 100 pounds and a force of about 2000 pounds is delivered by the hammer at a rate of 250 strokes per minute.

Forming Tank Car Manhole

Each car tank has a manhole in the center section with a reinforcing plate rolled to the proper curvature welded into the center section. After welding, each section is re-rolled to shape. The saddle plate has a flued opening which is formed by cutting a 6-inch hole in the center of the plate with a gas torch. The center of the plate is then heated until the edges of the hole reach a temperature of approximately 2200 degrees Fahr. The saddle plate is then placed on a collar die and a plug is pulled through, forming the flued opening. This forms the lower portion of the manhole and has a neck of the correct diameter and radius to which a steel nozzle is welded. When all mechanical welding has been completed, there remains a flued opening in one head only. This opening has been used to insert the mandrel for welding the last circular seam and when the mandrel is withdrawn,



HEAD of this tank has been welded in place by the roller welder



PROGRESSIVE ring-type annealing furnace in operation on a finished tank

a flanged and dished head or cap is inserted in this opening, forge hammer welded in place and crimped inwardly, after which the tank is complete.

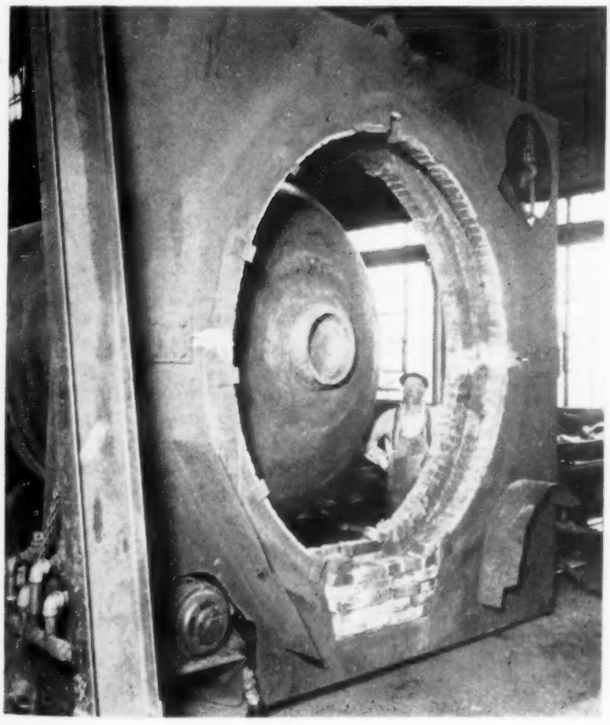
Gas Annealing Furnace

As each section of the tank is welded, it is annealed in a pit-type furnace at a temperature of 1650 degrees Fahr. This furnace is equipped with automatic controlling and temperature recording appliances so that a record is maintained of the exact temperature of every portion of the tank section being heat treated. This furnace is gas fired and burners are so arranged that no flames impinge directly upon the tank section.

After all circular seams are welded, the vessel is annealed in a ring-type furnace, gas fired, and having gas burners so installed as to prevent the flame impinging upon the tank.

After annealing, the tanks are ready for the final machining and drilling of the manway nozzle, after which the tanks are subjected to hydraulic tests as prescribed by various regulating bodies. Each seam is hammered while under pressure in order to make absolutely certain of a sound weld. After the testing has been completed the tanks are cleaned, dried, and painted.

The Columbiana company now is installing additional welding equipment for the production of such products and the welding fuel will continue to be transmutated natural gas. Natural gas is used basically for practically every heating operation in the plant.



CLOSEUP of gas-fired ring-type furnace which progressively anneals circular tanks, starting at one end and finishing at the other

A.S.T.M. Standards Index Is Now Available

Index to American Society for Testing Materials standards and tentative standards has been published by the society. It covers 504 standards and 290 tentative standards, adopted by the society up to Jan. 1, 1936, and is of service in ascertaining whether the society has issued any standard specifications or test methods covering particular engineering materials or subjects. It is also of help in locating conveniently any of the standards in the publications where they appeared.

All items are listed under appropriate key-words according to the particular subjects they cover. As a convenience a list is given of specifications and tests in numeric sequence of their serial designation. Copies are furnished gratis on written request to society headquarters, 260 South Broad street, Philadelphia.

"Time Clock" Checks Machinery Operation

Operating and idle time of machinery can be recorded on a recently developed "time clock" attached to a moving part of the machinery. The recorder, manufactured by the Service Recorder Co., Cleveland, is operated by any forward or backward, "straight arm" or tilting motion, and by any rotary or eccentric action, if it is not too rapid. The one-day record chart is turned at clock speed. However, only the time the machine is in motion is recorded. One, three and seven-day recorders operated by sidesway motion have been developed for auto trucks.

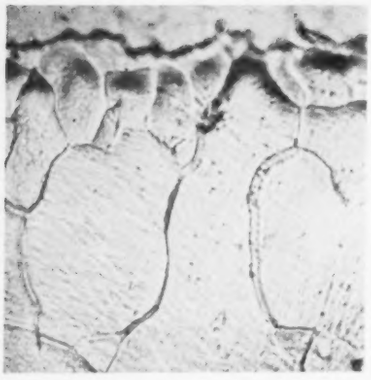


Fig. 1. Weld zone (a) between 18-8 (b) and electrolytic iron (c) after heating for one hour at 1750 degrees Fahr. × 750

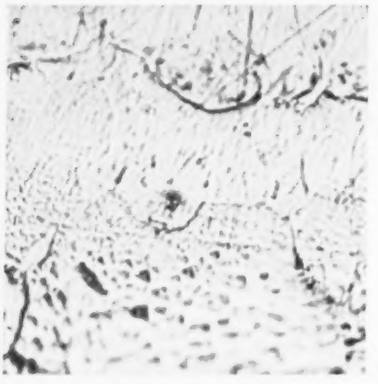
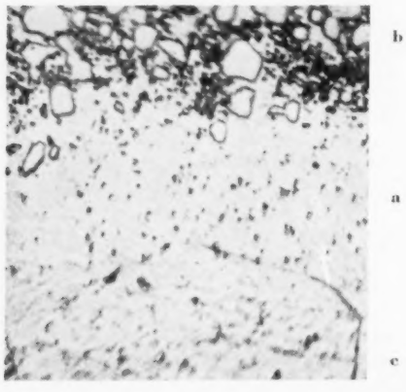


Fig. 2 Weld zone (a) between low carbon, 14 per cent chromium iron (b) and electrolytic iron (c) after heating for one hour at 1750 degrees Fahr. × 1000

Fig. 3 Weld zone (a) between nickel (b) and electrolytic iron (c) after heating for one hour at 1750 degrees Fahr. × 1000



Electrolytic Iron Provides Bond in Cladding with Special Alloys

BY DR. RAYMOND R. ROGERS
Department of Chemical Engineering,
Columbia University, New York

THERE is a need in industry for such materials as the stainless irons, high-carbon steels, high-speed steels, nickel and Stellite which offer excellent resistance to corrosion, heat and abrasion. Yet, because of high cost, the use of these materials has been impossible in many cases.

One of the most recent attempts to make many of these desirable materials available at a more reasonable price has met with remarkable success. After considerable research the discovery was made that comparatively inexpensive metals such as ordinary steel may be covered by a thin veneer of an expensive metal or alloy in such a manner that the veneer cannot be separated from the backing material even under unusually severe conditions. In this way the desired combination of strength with resistance to corrosion, heat or abrasion may be obtained at a much more reasonable price.

Clad materials produced by this new process possess the following advantages:

1. The weld between the cladding material and the thin film of electrolytic iron in contact with it takes place under the influence of high temperature alone. Rolling or other methods of elongation are not necessary, although it is probable that working strengthens the weld still further.

2. The weld between the cladding and backing material is continuous. Nonmetallic materials are entirely absent.

3. There is no abrupt change in composition at the weld. A thin layer of pure iron is introduced (by electrolytic means) between cladding and backing materials. An excellent diffusion takes place between each of these materials and the thin layer of iron. Hence, at the end of the process, the weld zone consists of an alloy gradually varying in composition from that of the cladding material on the one side to that of the backing material on the other side.

In order to produce a weld of this kind it is not only necessary to remove the oxide scale which has been formed on the surfaces of the backing and cladding materials during former high temperature treatments —a comparatively simple operation —but it is also necessary to eliminate the film of nonmetallic material which rapidly forms on the surface of many important corrosion, heat and abrasion-resistant metals at ordinary temperatures, which is a much more difficult operation. This film is so thin that the metal, when covered by it, may still appear bright to the eye and entirely free from nonmetallic material.

The method of cladding with the well-known 18-8 chromium-nickel steel was first worked out. The same method was then used, with certain modifications in some cases, for cladding with other expensive materials.

The cladding method may be summarized as follows:

1. Two plates of 18-8 are placed back to back with a thin separating layer of talc or magnesia (suspended in sodium silicate) between them. These plates are welded together around the edges.

2. All nonmetallic material is removed from the exposed surfaces of the 18-8 plates.

3. Before a new nonmetallic film

Fig. 4 Weld zone (a) between high-speed steel (b) and electrolytic iron (c) after heating for one hour at 1750 degrees Fahr. × 1000

can be formed, a layer of iron is electrodeposited upon the clean surfaces of the 18-8 plates.

4. A weld is produced between 18-8 and the electrolytic iron.

5. The composite thus produced is given a backing of ordinary, comparatively inexpensive ferrous material by rolling (the electrolytic iron being between the 18-8 and the backing material).

After a thorough cleaning to remove grease, the exposed surfaces of the 18-8 plates are subjected to an acid pickling process as follows: The exposed surfaces of the welded 18-8 plates are pickled anodically in 6-normal hydrochloric acid at ordinary temperature and an anode current density of 60 amperes per square foot until, on scrubbing, a clean surface, entirely free from nonmetallic material, is produced. The plates are removed from the bath, rinsed and thoroughly scrubbed. They are then replaced in the bath and anodically pickled just long enough to remove any nonmetallic material formed on the surface during the scrubbing. Finally, the plates are placed immediately in the iron plating bath without removing the adhering acid. The plating begins at once.

Procedure for Plating

Iron is plated upon the 18-8 surfaces which are entirely free from nonmetallic material. The plating bath contains 40 ounces per gallon of ferrous chloride ($FeCl_2 4H_2O$), 45 ounces per gallon of calcium chloride ($CaCl_2$) and just sufficient hydrochloric acid to prevent the formation of a precipitate in the bath. A temperature of about 195 degrees Fahr. and a cathode current density of 60 amperes per square foot are used. Under these conditions iron is deposited at the rate of about 0.003-inch per hour. The rate of deposition may be greatly increased by increasing the cathode current density.

There is more than one method of carrying out the final part of the cladding process. The following method is, perhaps, the most important: The two welded plates of 18-8 whose exposed surfaces have been pickled and plated with iron are placed between two slabs of backing material, such as low-carbon steel, and the four are seam-welded around the edges. The combination is heated for an hour at about 1750 degrees Fahr. to produce a diffusion weld between the electrolytic iron and the 18-8 (see Fig. 1). It is then heated to about 2100 degrees Fahr. and rolled. Finally, the welded edges are sheared off and two plates or sheets, each clad on one side with 18-8, are the result.

It is possible to produce material clad by this process in a number of different forms such as sheet clad on one side, sheet clad on both sides, and rods.

After the cladding process had been successfully worked out in the case of 18-8, cladding with other expensive materials was investigated. It soon became evident that metals and alloys such as the stainless irons, high-carbon steel and nickel could be applied successfully as cladding material by the same method as that used in the case of 18-8 (see Figs. 2 and 3).

When cladding with high-speed steel was investigated it was found necessary to modify the pickling procedure. First of all, the high-speed steel may or may not require a preliminary anodic treatment in 6-normal hydrochloric acid. Whether this acid treatment is necessary or not will depend upon the nature of the nonmetallic material on the surface of the metal. Following this hydrochloric acid treatment the high-speed steel is given an anodic treatment in an alkaline bath. Ordinary temperature and a current density of 25 amperes per square foot are used. At first there is no sign of gas evolution at the surface of the high-speed steel. Later, gas appears and when the evolution is entirely uniform over the whole surface this part of the treatment has been completed. The steel is then dipped in hydrochloric acid and finally, while still covered with acid, placed in the iron plating bath. The remainder of the procedure is essentially the same as in the case of 18-8. Excellent results have been obtained with high-speed steels of various analyses such as the 18-4-1 (see Fig. 4) and 18-4-$>$2 types and the 18-3-1 type containing 12-14 per cent cobalt.

Applicable to High-Speed Steel

The cladding of high-speed steel with iron is also possible by this process and should prove to be of benefit to manufacturers of high-speed steel products. Ordinarily there is a considerable loss of valuable material due to the oxidation and cracking which occur at the surface of the high-speed steel during high-temperature treatment. This loss may be largely, if not entirely, eliminated if the well-annealed ingot is first pickled and plated, as already described with a layer of iron ⅛-inch or more in thickness and then heated for an hour at 1750 degrees Fahr. to produce a weld between the iron and the high-speed steel. The ingot, thus protected by a comparatively inexpensive layer of electrolytic iron, is then ready for high temperature forging treatment.

The iron layer must be thick enough so that it will not have scaled away completely by the time the high temperature treatment is completed. Any small amount of electrolytic iron which remains on the ingot after the high temperature treatment may be removed by grinding or pickling.

Ordinary steel has also been clad with Stellite by a procedure somewhat similar to the one used in the case of high-speed steel. The alloy is treated anodically in 12-normal hydrochloric acid at room temperature and a current density of about 60 amperes per square foot. This continues until the Stellite is covered by a dark blue material (which cannot be removed by a scrub brush). After rinsing it is pickled by the alkaline anodic treatment already mentioned in the case of high-speed steel. As a final step, following the alkaline pickling, the Stellite is given a short hydrochloric acid dip which dissolves the nonmetallic material formed on the surface. A fresh, metallic surface is thus produced. Still covered with acid, the alloy is immediately transferred to the iron plating bath. When the plating is completed the composite metal is seam welded to a piece of backing material such as low-carbon steel. The combination is heated for some time at about 1750 degrees Fahr. and the Stellite and backing material are pressed together.

In this brief outline it has been possible to mention only the outstanding features of this new process. No attempt has been made to enumerate its possible applications. However, it is obvious that these are numerous and important.

The author wishes to express his gratitude to P. A. E. Armstrong, Westport, Conn., for permission to publish the results of this research and for supplying the photomicrographs.

Composite Steel Already Placed in Production

Composite plates of tool steel backed by mild steel, and stainless steel backed by mild steel, are being produced by the cladding process described above, on which patents are held by P. A. E. Armstrong. Shear knives with inserts are being made by the process, and numerous other applications are foreseen. Licensees under Mr. Armstrong's patents are the Duo Metal division, Latrobe Electric Steel Co., Latrobe, Pa., and the Jessop Steel Co., Washington, Pa.

Equipment and procedure involved in commercial application of this cladding process are discussed in a paper by L. C. Grimshaw, superintendent of the Duo Metals division of Latrobe Electric Steel, for presentation at the coming meeting of the American Institute of Mining and Metallurgical Engineers. This article will appear in an early issue of STEEL.

Surface Treatment

Control of Electroplating

Part III

THIS is the third installment of a series of discussions devoted to the control of electroplating. The first section (Jan. 27) dealt with relationships between weights of electroplated coatings and their thickness, and set forth a recommended test for porosity; the second part (Feb. 3) outlined apparatus, solutions and procedure for determination of nickel coatings on steel and nonferrous metals, composite copper and nickel coatings on steel, and copper on steel.

The discussion to follow takes up determination of chromium plate, composite chromium-nickel, zinc and tin.

Determination of Chromium

This determination again requires the services of a chemist to set up the procedure and train the operator. The method is not as rapid as some of the others described but it is extremely accurate and the best available for the determination of chromium. It consists essentially of stripping the chromium plate from the base metal and analyzing the stripping solution for chromium.

If the base metal is a brass or some copper alloy, the coating should be stripped by using the solution and procedure described in this department for Feb. 3 under "Determination of Nickel over Nonferrous Metals;" if the coating is over ferrous metals, it should be stripped by using the solution and procedure described in this department for Feb. 3 under "Determination of Composite Coatings."

In both cases, when the stripping is complete, add 20 cubic centimeters of concentrated sulphuric acid (specific gravity 1.84) and evaporate until heavy sulphuric acid fumes are given off. Cool to room temperature and dilute to 100 cubic centimenters with distilled water.

Solutions Required

1. A 3 per cent solution of silver nitrate.

2. Freshly prepared 10 per cent solution of ammonium persulphate.

3. N/20 potassium permanganate solution, standardized against pure sodium oxalate.

4. N/20 ferrous ammonium sulphate solution containing 5 per cent of concentrated sulphuric acid (sp. gr. 1.84).

5. A 5 per cent solution of concentrated sulphuric acid.

6. Concentrated nitric acid (sp. gr. 1.41-1.42).

7. A 20 per cent solution of hydrochloric acid.

Procedure

Take an aliquot portion of the stripping solution so that it contains approximately 10 to 50 milligrams of chromium and adjust the volume so that the sulphuric acid content is approximately 5-6 per cent. Add one cubic centimeter of concentrated nitric acid for each 100 cubic centimeters of solution and heat but do not boil the solution. Add 30 cubic centimeters of the silver nitrate solution and then 25 cubic centimeters of the freshly prepared ammonium persulphate.

The solution then should be boiled gently for 10-15 minutes to expel the excess of persulphate. (If the solution becomes pink, it shows that permanganate has been formed from manganese present in the solution and in this event, 10 cubic centimeters of 20 per cent hydrochloric acid must be added and the boiling continued until the permanganate is destroyed.)

Cool the solution to room temperature and add 25 cubic centimeters of ferrous ammonium sulphate from a pipette. Then titrate the excess ferrous ammonium sulphate with N/20 potassium permanganate to the first permanent pink tint. Titrate a second 25 cubic centimeter portion of the ferrous ammonium sulphate to the same end-point in a volume of 5 per cent sulphuric acid solution equal to the above volume, for use as a blank. The difference between the two titrations is the permanganate equivalent of the chromium present.

To insure a high degree of precision, it is desirable to carry out the determination in a volume of not more than 300 cubic centimeters, providing that the specified sulphuric acid concentration can be attained within this limit.

Calculations

The difference between the titrations in cubic centimeters multiplied by the normality of the permanganate solution (1/20) and then by 17.33 gives the weight of chromium in milligrams present in the aliquot portion taken for the analysis. Dividing the resultant figure by the fraction of the stripping solution taken as the aliquot portion for the titration and again by the area of the stripped sample in square inches produces the milligrams per square inch (m.s.i.) of the chromium coating.

Composite Coatings of Chromium and Nickel

WHEN chromium and nickel in a composite coating are to be determined, there are several procedures

and Finishing

which may be used. The following are recommended:

Stripping

The stripping solution consists of 50 parts sulphuric acid (sp. gr. 1.84), 3 parts hydrochloric acid (sp. gr. 1.18-1.19), and 50 parts water.

Procedure

Place the part to be stripped in a container of suitable size so that the part will be just covered with stripping solution. Insert a thermometer, cover the container with a watch glass and place the container on a hot plate. Maintain the temperature of the solution between 100-120 degrees Cent., until the coating is completely removed. Remove the thermometer and the sample from the solution, washing them well with a stream of distilled water. Filter the solution through No. 40 Whatman paper, supported by a platinum cone, into a 500-cubic centimeter volumetric flask, cool to 20 degrees Cent. and dilute the solution to exactly 500 cubic centimeters at 20 degrees Cent.

Precautions

A. It is desirable to keep the volume of the stripping solution at a minimum, using not more than 300 cubic centimeters unless a larger amount is required to strip heavy coatings completely.

B. The temperature of the stripping solution should not exceed 120 degrees Cent. to insure against the evaporation of water or hydrochloric acid.

C. Care should be used to minimize the solution of the base metal as copper in large amounts in the solution interferes with the subsequent determination of nickel. The test sample should be removed from the solution immediately after the removal of the coating or preferably before complete removal, if only small spots of the coating remain on the edges or corners, rather than dissolve too much copper. If there is reason to suspect the presence of more than 60 milligrams of copper in the stripping solution, it should be removed with hydrogen sulphide or by the electrolytic method described for the determination of copper.

Treat the stripping solution obtained by the above method in accordance with the dimethylglyoxime procedure for the determination of nickel (Feb. 3). Determine the weight of nickel coating in accordance with that procedure.

Calculations

Weigh the part being tested before and after stripping and determine the total weight of nickel and chromium by the loss in weight. Subtract the weight of the nickel coating in m.s.i. from the weight of the entire coating in m.s.i. and obtain the weight of the chromium by difference.

The above method is for the determination of composite nickel and chromium coatings over nonferrous metals. If the coating is over ferrous metals the following procedure is recommended:

Solution

The stripping solution consists of one part of concentrated hydrochloric acid (sp. gr. 1.18 to 1.19) and one part of water to which solution 10 grams per liter of Quinoline (commercial grade) or 10 grams per liter of No. 110 Rodine (American Chemical Paint Co., Ambler, Pa.) shall be added as an inhibitor.

This solution, when used for other than composite coatings, may be used repeatedly until the acid concentration decreases to a point where the stripping action becomes objectionably low.

Procedure

The entire sample to be tested should be carefully cleaned and weighed. The sample then should be immersed in the stripping solution until the gassing ceases and a visual examination of the part shows that the coating has been removed completely. The sample then should be washed, dried and weighed again. Determine the weight of the composite coating by dividing the loss in weight in milligrams by the area of the part in square inches. The solution is now ready for analysis and either of two procedures may be used. The solution may be analyzed for nickel by using the dimethylglyoxime method or it may be analyzed for chromium, using the ammonium persulphate-potassium permanganate method both of which have been previously described. The part of the coating which is not determined directly by analysis may be determined by difference as described under "calculations" above.

When chromium alone is plated over the base metal the two stripping methods are all that are needed, weighing the sample before and after stripping. When the base metal is a nonferrous alloy, use the hydrochloric sulphuric acid stripping method; when the base metal is a ferrous alloy use the Rodine-hydrochloric acid stripping method. This manner of determining chromium is not as accurate as the titration method but in many cases will be accurate enough for practical use where speed is desired. Merely divide the loss in weight in milligrams by the area of the sample in square inches to obtain the weight of coating in m.s.i.

Determination of Zinc and Tin

THE determination of zinc or tin coatings on small parts is simple. The parts are weighed before and after stripping and the weight of coating determined from the loss in weight as described above. For these coatings use a solution of concentrated hydrochloric acid (sp. gr. 1.18 to 1.19) to which 10 grams per liter of Rodine or Quinoline has been added. The procedure is the same as for any other stripping method. The solution may be re-used until the stripping action becomes objectionably slow. This method, of course, is only suitable when the base metal is a ferrous alloy.

Determination of Zinc on Large Parts

In many cases where zinc is deposited on large parts it is not practicable to weigh and strip them as is done in the case of small parts. To overcome this difficulty a special procedure has been devised which has proved entirely satisfactory. While this procedure appears difficult, it will be found that it is simple and can be performed in a few minutes after the operator has become proficient in its use. The apparatus required can be

made by any glass blower at a nominal cost.

Apparatus and Solution

One set of apparatus as shown in the accompanying diagram.

One thermometer with smallest subdivision equal to 0.5-degree Cent. and accurate to ± 0.25-degree Cent. over the normal range of room temperature.

One barometer.

The stripping solution consists of one part of concentrated hydrochloric acid (sp. gr. 1.18-1.19) and one part of water, to which 10 grams per liter of No. 110 Rodine has been added.

Procedure

For curved surfaces, select convenient area such as 1 square inch. Cut out a paper disk to this size and lay it on the coated surface. Brush on a coating of melted wax compound (one part beeswax and one part paraffin) over the paper disk and at least 2 inches from the edges of the disk. After the wax has cooled, the paper disk with its wax coating should be removed carefully, first cutting all around the edges with a sharp knife. The wax should be pressed tightly to the surface at the edges of the hole left by the disk by exerting a pressure with the fingers. The apparatus is then set up as illustrated and should be connected to the coated area by sealing the glass bell over the waxed area with modeling clay.

For flat surfaces the paper disk may be omitted and a glass bell sealed directly to the surface.

The air should be exhausted from the assembled apparatus by running water through the thistle tube until the bell and exit tube are full. The water then should be allowed to flow until all air bubbles are removed.

The thistle tube then is filled with the stripping solution, which has been previously filtered through a fine filter paper. The stopcock is operated to allow the acid to flow slowly down to the coated spot. When the evolving hydrogen passes into the eudiometer tube at the rate of two to three bubbles per second, flow of the stripping solution is stopped. Allow the reaction to proceed until the rate of gas evolution is slower than two to three bubbles per second. Add stripping solution slowly in lots of approximately 25 cubic centimeters until no further gas is evolved.

After the reaction has ceased, run water in through the thistle tube until all the hydrogen has been driven into the eudiometer tube.

Place a wet rubber stopper in the open end of the eudiometer tube and remove from the beaker. Suspend the thermometer nearby and allow to stand for at least 15 minutes after which the volume of the gas, at atmospheric pressure, the temperature and the barometric pressure should be determined.

Calculations

For zinc, the weight in milligrams removed from the measured area is equal to:

$$2.72 \times V \times \frac{(P-A)}{760} \times \frac{293}{(273+T)}$$

in which

P = Atmospheric pressure in millimeters of mercury.

A = Aqueous vapor tension in millimeters of mercury at Temperature T.

T = Observed temperature in degrees Cent.

V = Observed volume in cubic centimeters.

The weight of coating in m.s.i. is computed by dividing the area of the stripped surface by the weight of zinc removed in milligrams.

This method should not be used for determining weights of coatings of metals applied to steel of carbon content in excess of 0.25 per cent.

(To be Concluded)

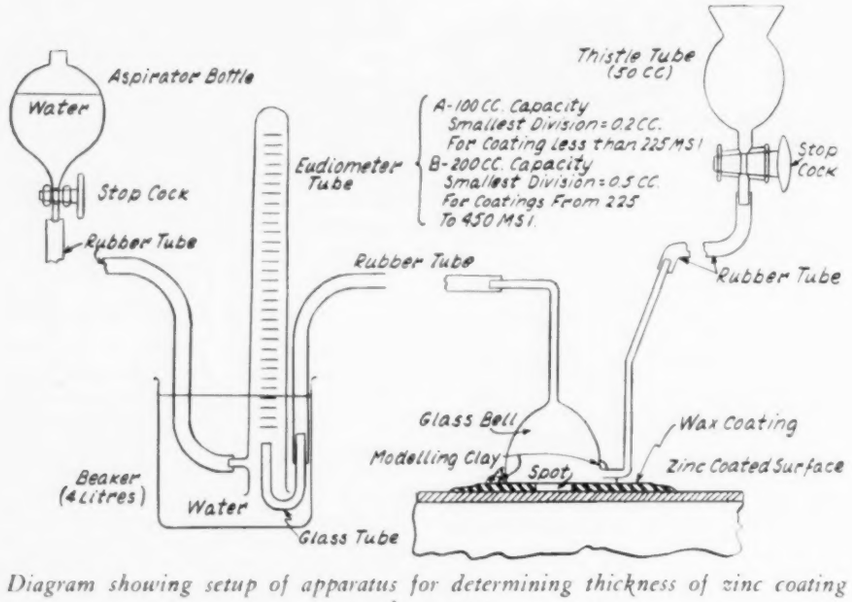


Diagram showing setup of apparatus for determining thickness of zinc coating on large parts

Metal Spraying Gains New Uses

METAL spraying has developed many new uses, according to L. E. Kunkler, president, Metallizing Co. of America Inc., Los Angeles, who says that the oil industry almost universally has adopted this method of surface treatment of refinery vessels in order to protect them against the action of hydrogen sulphide.

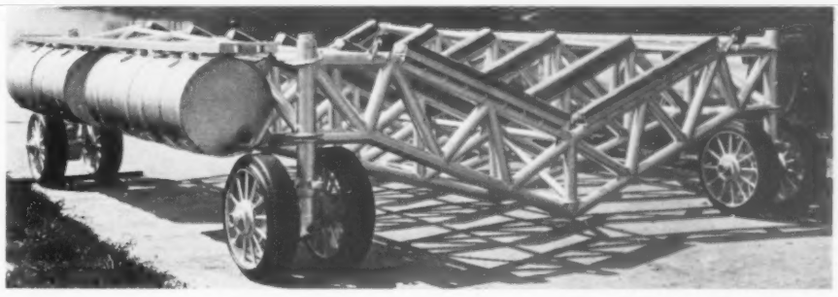
Spraying of zinc, says Mr. Kunkler, has been adopted quite extensively for the protection of railway bridges and, pole line hardware and of particular interest is the adoption of the spraying process of lining large water tanks with pure zinc, thus increasing their rust-free life 20 to 30 years. A number of nationally known manufacturers now apply sprayed metal coatings to their products. Many machine shops have adopted the process for applying high carbon steel and stainless steel on shafting which has become worn.

An important development, he says, is the headway made in proving to engineers that sprayed babbitt metal is superior to poured babbitt metal. This is based on the assertion that the sprayed metal bonds more effectively to the base than metal which is applied by the conventional method of pouring. This new method, it is stated, eliminates possibility of creeping or the formation of blow holes in the metal.

Rust Used As Inhibitive Pigment in Surface Primer

A new rust inhibitive primer, the result of extensive work in the company's laboratories, is announced by John W. Masury & Son, 42-50 Jay street, Brooklyn, N. Y. It is recommended as a first coat for iron, ferrous alloys, aluminum and magnesium alloys. When first formulated it was tested on panels in many sections of the country, including seashore, rural and industrial exposures and the results are said to have been uniformly satisfactory, as compared with the older types of iron primers. The material now is being used in considerable quantities for priming steel sash, exteriors of water tanks, gasholders, central station equipment and in other uses.

Hauls China Clipper from Sea

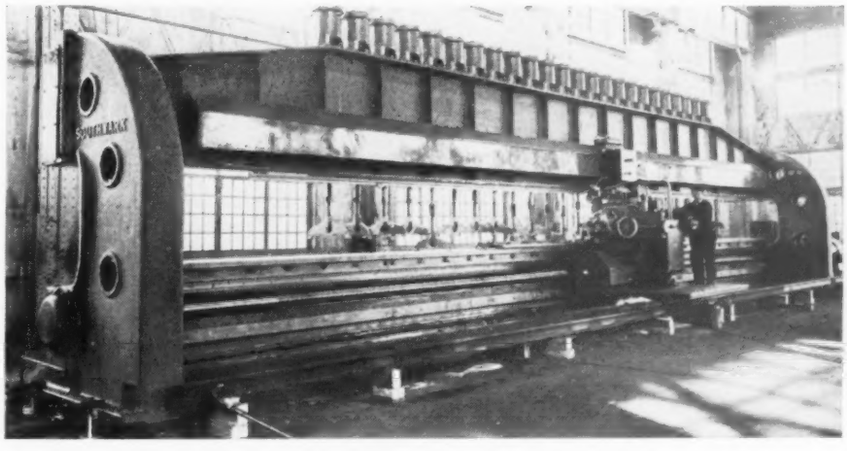


THIS handling truck which supports the entire weight of the million-dollar "China Clipper," hydroplane recently placed in trans-Pacific freight and passenger service, when it is moved into and out of the water and around on land, was fabricated from 16-gage chrome-molybdenum steel tubing. Trusses of the truck were oxyacetylene welded and the welds stressed relieved. The truck will carry a static load of 35,000 pounds, and an even greater dynamic load. In the airship itself, 74-pound S. A. E. 4130X chrome-molybdenum steel mountings support the 2380-pound motors. Chrome-moly forgings were used in brackets, hinge fittings, bulkheads and seawing fittings. Photo courtesy Climax Molybdenum Co., New York

Parade of Progress in Pictures

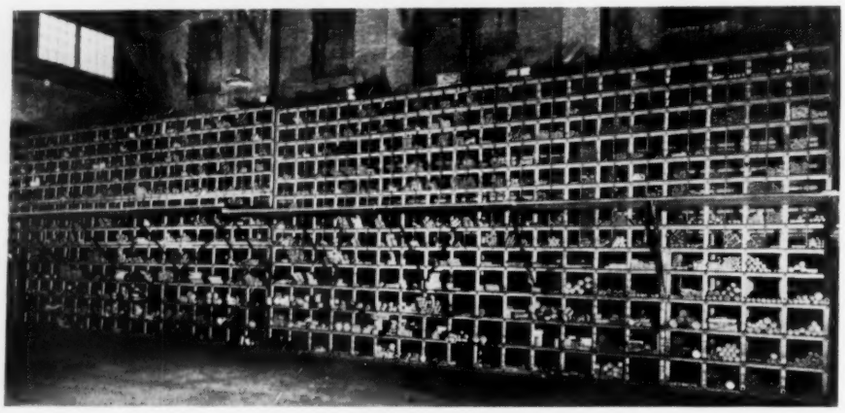
See next page

105-Ton Giant Trims Plates



PLATES up to 5 inches thick and from 6 to 36 feet long are cut, scarfed or beveled to 0.001-inch accuracy by this huge 105-ton planer equipped with electric feed. The machine is 60 feet long and stands over 15 feet from the floor, 1½ feet of the base being below the floor level when installed. It is anchored in 5 feet of concrete. The carriage automatically glides back and forth on brass gibs at 15 to 45 feet per minute as the hard tool steel bits plane 0.001 to 0.25-inch from heavy steel plates at widths up to 1 inch. Each time the tool feeds itself to a predetermined depth. Tool adjustment vertically is 11½ inches; horizontally, 19 inches. "Keyways" or interlocking joints on deck plates and the like are cut to depths from ¾-inch to 1½ inches. The 24 pneumatic hold-downs exert a pressure of 120 tons on the plate. One-piece drivescrew is 7 inches in diameter, 59 feet overall. It has a quintuple thread and runs on roller bearings. The machine was built by Baldwin-Southwark Corp., Philadelphia, for installation at Philadelphia navy yard

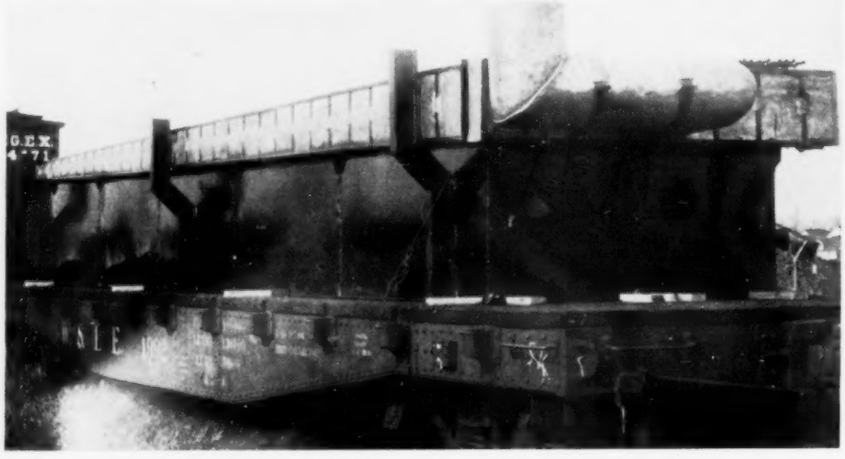
Good Housekeeping in Warehouse



HANDLING of bars out of warehouse has been facilitated by the installation of the illustrated modern system of steel racks. These racks, designed and erected by the National Steel Co., Chicago, as part of an improvement program, are small steel shapes bolted together. Additional compartments can be added. Seven tiers are served from the floor and six from the balcony. More than 380 different sizes of flats are stocked, as well as a wide range of bar mill products, including rounds. Separate compartments are provided for the various sizes and grades, and each space is given a code number. Bar ends are given an identifying color. A perpetual inventory is kept of stock, which is ordered by number

Parade of Progress in Pictures

For Finishing Aluminum Auto Bodies

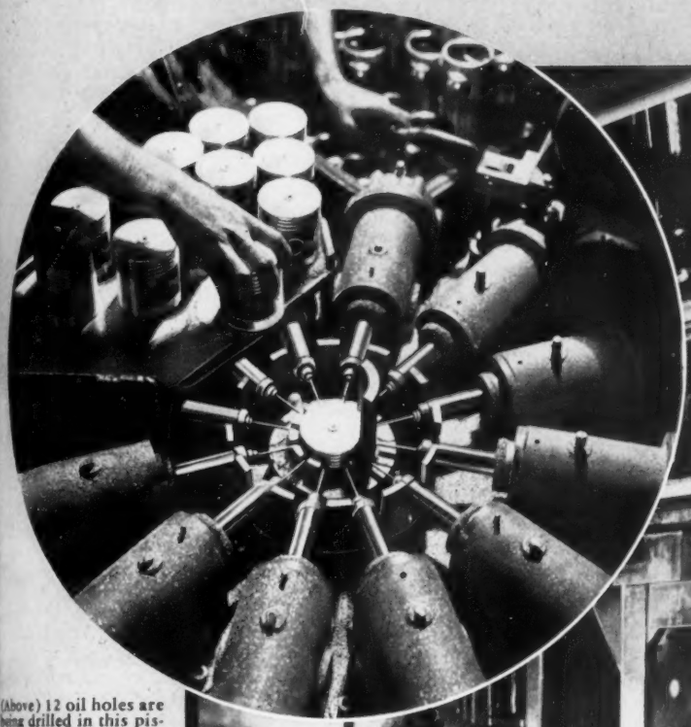


PRODUCTION of colored finishes on la ge automobile body stampings of aluminum by the "alumilite" process will be carried on in this tank, said to be one of the largest of its type. The process involves the anodic treatment of the aluminum surface and its impregnation by suitable dyes. Designed by the Gross Engineering Corp., Cleveland, for an Evansville, Ind., company, the tank is 36 feet long, 6 feet 6 inches wide, and 4 feet 6 inches deep. Empty it weighs 16 tons. The outer tank is of lead-coated steel plates and the inner one of heavy-gage lead sheets supported by steel mesh. A double-bottomed, water jacket containing 800 feet of lead steam piping is provided between the inner and outer shells to maintain the solution at the correct temperature. Fume removal is through a slotted hood surrounding the upper part of the tank just above the solution level

FOR MACHINES

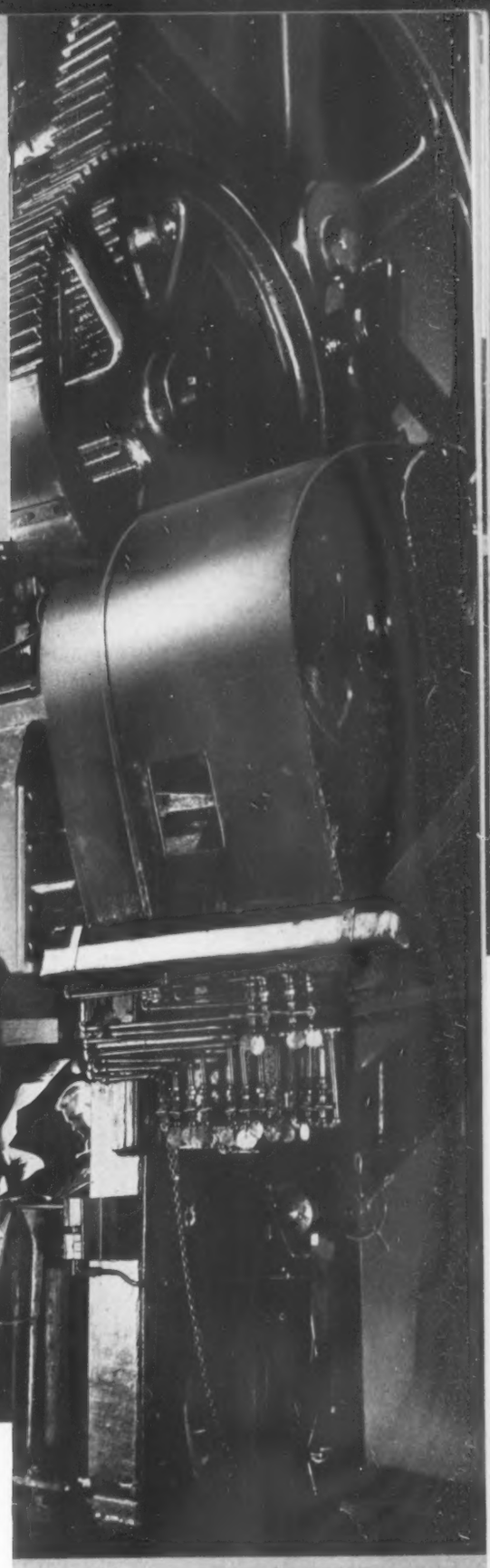
that must not stop . . .

LEADING PLANTS USE GULF QUALITY LUBRICANTS



(Above) 12 oil holes are being drilled in this piston in one operation. The use of the right Gulf lubricant helps keep such automobile plant equipment as this in continuous, low cost service.

(Right) In one operation, this huge press shapes a front fender from a flat steel blank. Gulf supplies a special lubricant used in the high pressure oiling system on this machine—which helps keep this costly equipment at its highest operating efficiency.



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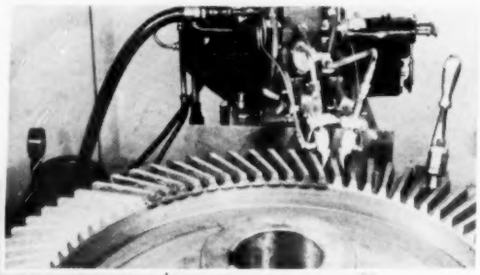
Methods and Materials

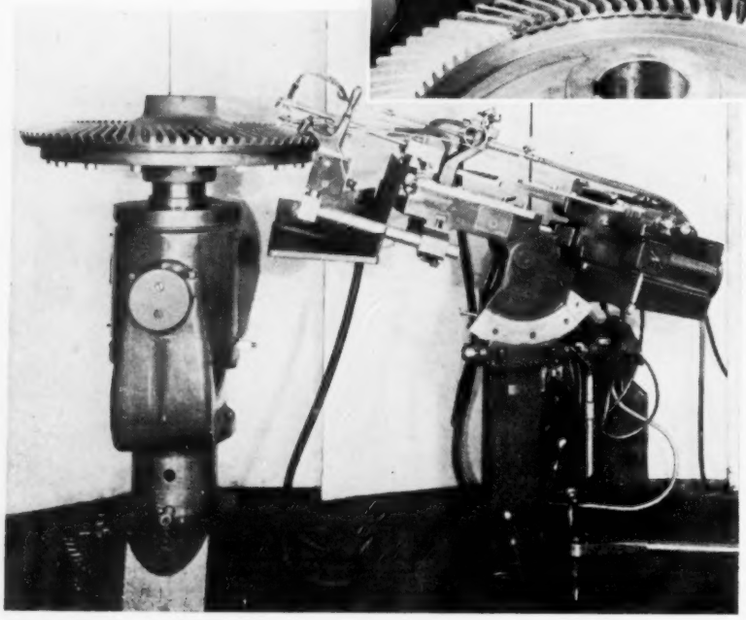
Develops Oxyacetylene Flame Hardening Machine for Large Bevel Gears

DURING recent years considerable interest has been manifested in oxyacetylene flame hardening. This process affords a convenient means of localized surface hardening, as for example teeth on gears and other machinery parts, but until just a short time ago the work was considered to be of an experimental or development nature.

The process now assumes commercial importance with the Gleason Works, Rochester, N. Y., designing and placing on the market a universal machine for flame surface hardening of large bevel gear teeth. This machine, shown in the accompanying illustration, will accommodate pitches from 5 diametral pitch and diameters up to 100 inches. The equipment is claimed to be simple to set up and operate, cost of labor and gas is small, and the hardening is accurate and uniform.

As will be noted from the illustrations, the machine consists of the base, the work holding unit, and an upright which carries the burners. The work head is stationary on the base, the upright being adjustable to and away from the work head for various diameters of bevel gears to be hardened. The work spindle is universal. It swings on trunions through a 90-degree arc; spacers are provided for adjusting to a convenient working height.





Teeth on bevel gears up to 100 inches in diameter can be oxyacetylene flame hardened in this new machine. Operation other than indexing is entirely mechanical. Both sides of a tooth are hardened simultaneously as shown in the close-up view at the upper right

The burner upright is raised or lowered by hydraulic pressure and is locked by a safety clamp. The burner unit also has an angular adjustment and both forward and return strokes are independently adjustable for speed. Direction of travel of each burner is controlled by means of an adjustable guide. A small hydraulic power unit supplies the necessary power.

No measurable distortion can be found in surface hardened gears, it is stated, for tooth bearings have been checked repeatedly before and after surface hardening and show no change. The body of the gear is unchanged during the process. This freedom from distortion is an important advantage in many ways, because the uniform bearing on all teeth is most desirable from the standpoint of wear and strength.

Danger of Drawing Reduced

A feature of the machine is that it simultaneously hardens both sides of a tooth, thus removing the danger of drawing or checking when one side is hardened at a time. Quenching is accomplished by two small water streams directly back of the burners.

Operation of the machine, other than indexing, is entirely mechanical. The hydraulic control is flexible and permits variable speed of travel so that uniform heating of a section of tapering thickness and speeding up at both ends to prevent overheating of the corners of the teeth are possible. Burners are simple and inexpensive, and the five pairs furnished as standard equipment are expected to suffice for almost any gear which might be hardened.

Standard commercial cylinders of oxygen and acetylene are used, unless some more direct source of gas is available. The steel recommended for surface hardening is a casting or forging containing 1.25 per cent manganese and 0.35 per cent carbon, or S.A.E. 6145, the latter providing greater strength. It is said that a wearing surface equal to case hardening can be obtained, namely, Rockwell 55-60 and scleroscope 65-70. Penetration

can be varied to almost any desired amount by adjusting the speed of travel.

S S S

Music and Piano Wires Are Considered Aristocrats

The aristocrats of steel wire are music and piano wires. A pull equivalent to more than a third of a million pounds is necessary to break a bundle of piano wire 1-inch thick, while a square inch of the steel used to build a sky-scraper will be broken by a pull only one-fifth as great.

Piano wire, as its name implies, is used as strings for pianos, guitars, banjoes and mandolins, where extreme toughness and strength are necessary. Music wire is specified for high-grade springs and for other applications where extra quality and strength are essential.

S S S

New Molding Compound Of Synthetic Rubber

A molding compound of synthetic rubber, which, it is said, can be molded much the same as phenols and ureas, curing almost as fast, is announced by the Thiokol Corp., Yardville, N. J. The compound—Thiokol—in its molded state is stated to be fully vulcanized and is unaffected by gasoline, oil or exposure to air and sun, which recommends it for many industrial applications.

Experiments are under way to develop a molding technique which will make the material available for use in all plastic molding plants.

S S S

Near-Accident Encourages Wearing of Safety Goggles

Industrial plants frequently encounter difficulties in enforcing regulations concerning the use of safety equipment in hazardous operations. Unfortunately, accidents or near accidents seem to create more respect for these regulations than safety training. The wearing of goggles in grinding departments is a good example.

Recently, a workman in a large manufacturing plant was spared a serious accident, probably the loss of an eye, because he was wearing his goggles. A buffing wheel, being collected for re-coating, had been dropped and had come in contact with water. This condition not being noticed in the re-coating department, the wheel was refinished and returned to the metal finishers to be put back into use. Because of the dampness, the re-coating of this wheel was defective—a piece flew off, hitting and breaking a lens on the goggles of a near-by workman.

Naturally, this near-injury accident had a salutary effect upon workmen in that department and it was a strong argument in favor of strict rules regarding the wearing of goggles.

Crates for Bottle Sealed Oil Are Built of Steel Sheets and Flat Wire

MANUFACTURE of crates for handling and transporting bottle sealed oil involves the consumption of a large tonnage of steel sheets and flat wire and the use of a large amount of manufacturing equipment. In the accompanying illustrations are shown two types of oil bottle crates produced by the American Machine & Metals Mfg. Corp., Opaco division, with headquarters at 100 Sixth avenue, New York, for the Shell Petroleum, Shell Eastern Petroleum, Colonial Beacon, Pure Oil and other oil companies, which are specially designed for easy and safe handling of bottles.

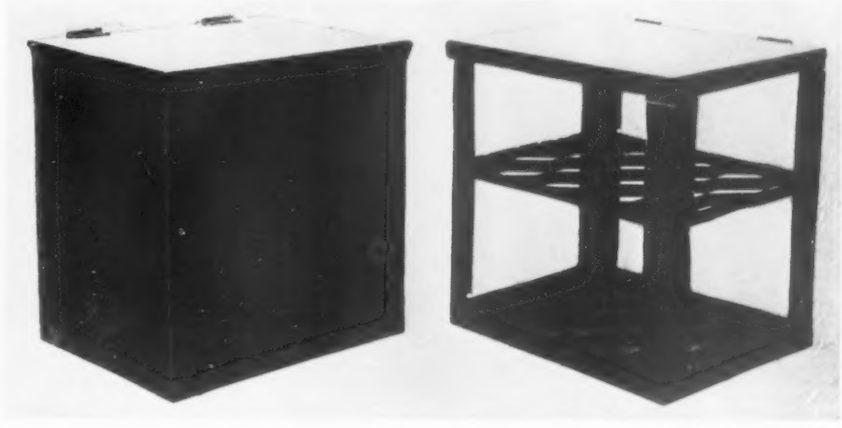
How Crates Are Formed

The open side crate shown weighs 13 pounds, 3 ounces. It has bottom of 19-gage and cover and corner angles of 16-gage steel sheets. The bottle spacer strips are formed of 20-gage, No. 4 temper, cold rolled flat wire, ⅝-inch wide. Top reinforcing band is formed from ⅛ x ¾-inch steel band. Cover is attached to the crate by 2-inch butt hinges.

The closed side crate shown weighs 19 pounds 10 ounces. Bottom is of 19-gage, sides of 18-gage and cover of 16-gage steel sheets. Spacers are formed from 20-gage, No. 4 temper, cold rolled flat wire, ⅝-inch wide. The center band, to which the spacer is welded, is of 20-gage steel band, ⅝-inch wide. The cover is attached by 2-inch butt hinges.

All parts of these crates are formed under heavy presses. The spacer strips, after being formed, are spot welded together to form hexagonal openings into which the bottles fit snugly. Each hexagonal opening is so arranged, relative to the others, that it is impossible for the bottles to come in contact with each other; instead, they are supported and cushioned against shock by the spring action of the spacers. This effect is accomplished by spacing each of the hexagonal openings off center relative to the adjacent opening. There are two rows of spacers, one located near the bottom of the crate and the other about the center, thus forming a cushioned support for the body of the bottle at bottom and top.

Covers are flanged for stiffness and to secure smooth edges. The butt hinges are spot welded to the cover and to the top reinforcing band of the crate. All spot welding operations are performed in jigs or fixtures to insure accuracy of the completed product. In the manufacture of the closed side crate, the top edges of the side sheets are folded back on themselves to a depth of ¾-inch to stiffen the top of the crate and to give smooth edges. The two sides of these sheets, which form the



These two types of bottle sealed oil crates are formed under heavy pressures of steel sheets and flat wire. They are assembled by spot welding. They are cleaned, degreased, bonderized and finished with one coat of baked enamel

ends of the crate, are perforated and rolled inward to form smooth hand grips for handling.

Completed crates are thoroughly cleaned and degreased and then bonderized. They are painted by the dipping method, receiving one coat of baking enamel and being held in the baking oven for one hour at about 450 degrees Fahr.

Life of these steel crates, despite the rough treatment to which they are subjected, is long. Many have been in use for more than 10 years and a large majority more than five years.

Dies of Special Analysis Low-Carbon Steel Develop Superior Case

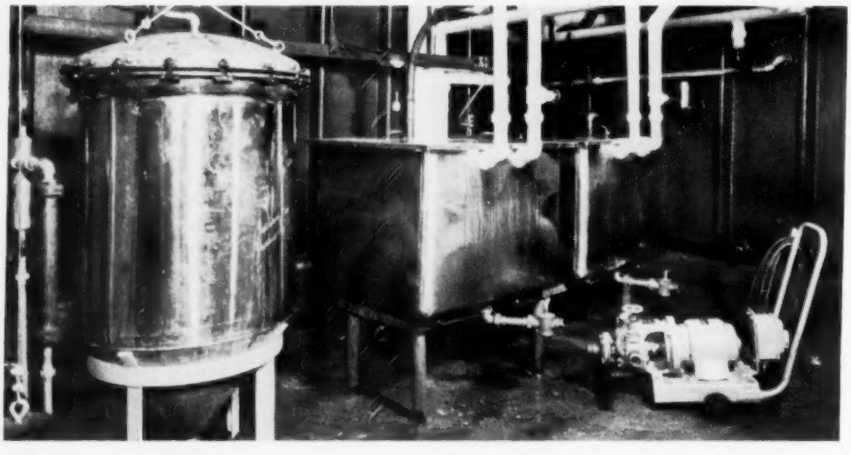
CONTINENTAL MACHINE & SPECIALTIES INC., Minneapolis, announces the development, in co-operation with the Central Steel & Wire Co., Chicago, of a low-carbon steel of an analysis that will take a superior case when treated with any of the newer, closely controlled case hardening processes. This steel is produced in thicknesses of ⅛ to ⅝-inch and in varying widths for each thickness. It is shipped in 3-foot lengths for convenient handling. Modern case hardening processes, with this steel, are said to produce in quick time a deep, close grained, tough case.

Has Numerous Applications

While this steel is recommended for screw machine cams, drill jig plates and many other parts, it is intended particularly for the use of licensees of the company in making metal stamping dies under the Continental system. Growing out of the company's early job shop experience, this system of making metal stampings is designed to use dies of unusually low cost for short run work. The dies employ the same principles as the sub-press type of die and they provide an entirely new method of running dies in punch presses, with safety and fairly fast production. There are 12 different types of Continental dies. In addition to blanking, piercing and other flat work, the process may be used for forming, drawing, trimming and other operations. The only limitation of the system is that it is for short runs and the usual peak for a short run is placed at 20,000 pieces. Approximately 500 metal stamping companies now are operating under the Continental company's license arrangement.

A recent survey by the Continental company in five typical industrial cities showed that the need for economical tooling for small quantities encompasses a large field. This survey showed that for every 20 items made in mass quantities there were 80 others that were made in small lots which had a total production of less than 20,000.

Stainless Steel for Beer



TANKS IN BREWERY of Star Beverage Co., Minster, O., are entirely of stainless steel of the 18-8 chromium nickel type. Built by Littleford Bros., Cincinnati, the seams were welded and ground to a smooth finish on the inside. Two 12-gallon mixing vats are shown at right. The yeast processing tank at left operates under pressure

Each 1935 Auto Averages 25 Pounds of Die Castings

In an address read before the Society of Automotive Engineers at its annual meeting in Detroit, Jan. 13-17, J. D. Fox, Doehler Die Casting Co., Toledo, O., outlined the role of die castings in automobile construction. The average total weight of die castings used in automobiles in 1935 was 25 pounds. Some makes average 50 pounds per car and one in particular used as high as 80 pounds. This growth of the use of die castings in automobiles is chiefly attributable to their widespread use for radiator grilles, radiator grille frames, side louvres, moldings and other large parts which were made of stamping on last year's models. Mr. Fox stated his own company is engaged in producing grilles for major automobile manufacturers for 12 different 1936 models.

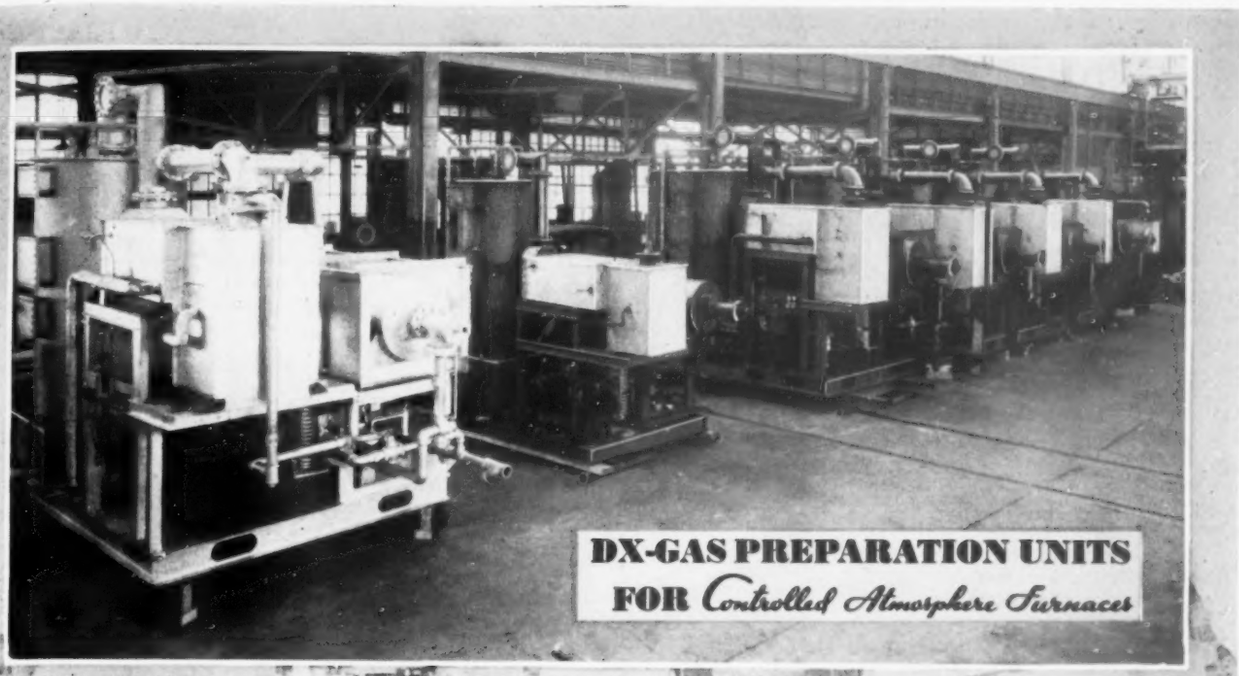
Antifriction Bearing Manual Is Published

Principles affecting the selection, application and operation of antifriction bearings are reviewed comprehensively in a 197-page, wire-bound engineering manual published by the Fafnir Bearing Co., New Britain, Conn. The manual, divided into five parts, deals with ball bearings in particular, and has a complete tabulation of characteristics, dimensions and capacities of the bearings described.

Fundamentals involved in correlating design requirements, load characteristics and service conditions to the choice of particular size and type of bearing are contained in the manual and should be of considerable interest to machine designers and production engineers.

Section I reviews the history and development of antifriction bearings, with particular emphasis on the improvement in characteristics which have expanded their field of usefulness. A broad analysis of bearing selection, on the basis of type, size and desired life expectation is given in the second section. Details of dimensions, load ratings and functional characteristics of a complete list of bearing types and sizes, including industrial pillow blocks and roller bearings as well as ball bearings, are reviewed in Section III. Section IV brings an extensive review of shaft-fitting methods, housing and mounting instruction, and advice on lubrication. The last section is a separately bound list of prices and weights prevailing January, 1936.

The manual will be sent free to executives and engineers responsible



DEMAND AND ACCEPTANCE REQUIRE THIS PRODUCTION LINE

Insistent demand for bright annealing, clean hardening, deoxidizing and scale-free work in gas carburizing led to the development of the SC Gas Preparation Units for Controlled Atmosphere by Surface Combustion Engineers a little more than two years ago.

Widespread acceptance throughout the steel and metal working industry and application to many other heat treating operations has necessitated the establishment of the production line pictured above which shows seven of these units going through our plant at one time.

Nearly 100 SC Controlled Atmosphere Preparation Units are now in operation. Some have been applied to existing furnace installations, others have been built for new furnaces. In every instance they are effecting very definite savings and producing improved quality work.

Write for information regarding the application of one or more of these units to your heat treating equipment.

Surface Combustion Corporation

SC

TOLEDO, OHIO

Sales and Engineering Service in Principal Cities

Also makers of ONE WAY FIRED SOAKING PITS - - - BILLET HEATERS - - - PACK OR PAIR ANNEALING, CONTROLLED ATMOSPHERE FURNACES - - - NORMALIZERS

FOR SPACE HEATING REQUIREMENTS INVESTIGATE SC GAS-FIRED UNIT HEATERS

for bearing selection or maintenance. Requests should be addressed, on company letterheads, to the Fafnir company.

Announces New Electrodes For High-Tensile Steels

A series of three electrodes developed for welding the new high-tensile carbon steels and high-tensile low-alloy steels, which have tensile strengths ranging from 65,000 to 100,000 pounds per square inch, is offered by the Champion Rivet Co., Cleveland. The rods in this group are designated as Red Devil-75 Red Devil-85 and Red Devil-95, the numerals following the tradename indicating in thousands of pounds the mean tensile strength obtained under average conditions.

The superior physical properties of the electrodes are obtained through the introduction of various ferroalloys, including a small percentage of molybdenum, which tends to add creep strength to the deposited metal.

According to the manufacturer, the following types of steel may be welded with the new electrodes: A.S.T.M. A-149 and A-150; U.S.N. specifications SGS 118; the numerous varieties of low-alloy, high-tensile steels; carbon-0.50 molybdenum steel; and structural silicon steel.

Chromium Steels as Seen By British Researchers

Chromium Steels, by Richard Henry Greaves; cloth, 321 pages, 6 x 9½ inches; published by His Majesty's Stationery Office, London; supplied by STEEL, Cleveland, for $2.15, plus 15 cents for postage; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

Following certain lines of investigation on chromium steels, in the course of research undertaken at Woolwich, England, on behalf of the department of scientific and industrial research, it became necessary to correlate data obtained by many workers under a variety of methods and materials as to make a simple comparison of their results impossible. A comprehensive review of the published information was accordingly prepared and is presented in the present volume.

It contains a detailed account of the history, constitution, mechanical and physical properties of chromium steels and a short description of their principal uses. In view of specialized treatises on these subjects no detailed reference is made to the specific applications of high-chromium steels for corrosion and heat resisting purposes. The plain chromium steels only are treated.

References include works published up to December, 1933. Since that time some further valuable material has appeared.

Welding, etc. . . .

by Robert E. Kinkead

IN THIS column, the author, well-known consulting engineer in welding, is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL.

Qualified Operators

MANY people are putting too much emphasis on the matter of qualifying welding operators. It seems rather obvious that if a man is hired to do welding that he should know how to weld. But, a good welding foreman can find that out by watching a new man for a day or two. The important man is the foreman. If the operator is not able to do the work satisfactorily, it is the foreman's duty to show him how to do it and give him the opportunity to learn the proper technique.

Given good engineering and competent foremen, welding is safe and offers no particular difficulties. Overemphasis of the subject of qualified operators is often the end product of poor engineering or incompetent foremen.

The consequences of overemphasizing qualification of welding operators are evident in many cities where structural steel is welded in the field. Often a welder is hired to do the welding and a duly "qualified" structural iron worker is also hired to watch the welder. Welding cuts across so many crafts, that no one operator is ever qualified to do all kinds of welding. What the qualification idea leads to is exactly what has happened in structural steel fabrication in the field—having a "qualified" operator standing around while another man who knows how to do the job gets it done.

• • •

Opportunity for Builders

WITH the exception of resistance welding, which includes spot, butt, flash and projection methods, welding operations are carried on at the present time by crude manual methods. The need is for more machine welding operations to improve the quality of the work and reduce the labor cost. The labor cost of gas and arc welding is out of all proportion as compared to other production operations.

Recognition of these obvious facts does not imply lack of social consciousness. There are not enough good welding operators to meet the demand now nor have there been enough in the last two years. Kids who just about know the difference between a screw driver and a monkey wrench are working as welding operators. The use of welding is expanding so rapidly that introduction of labor saving welding machinery will not reduce the number of men employed in welding the country. Seven hundred to a thousand new units go into service each month. Except in isolated communities, jobs may be found by or for welding operators replaced by machinery. The principal difficulty at the present time is that employers of welding operators are hiring them away from each other.

Manufacturers of machinery who are competent to build the equipment necessary to convert welding into machine operation are so busy building their regular lines that they are not interested in the job. The welding industry is busy and prosperous so that it is not interested. It seems to be each individual welding user's problem.

• • •

Keep Wheels Turning

AMONG the most expert craftsmen in the country are welders employed by steel mills in maintenance and repair work. During the depths of the depression these men kept equipment in operation when appropriations for even replacements were held up. In many cases, they would make new parts of welded steel to replace parts which had failed. A good master mechanic and resourceful welders make an unbeatable combination for keeping heavy machinery in operation.

for Pickling Tanks

Pickling Tanks—Quality Score Card

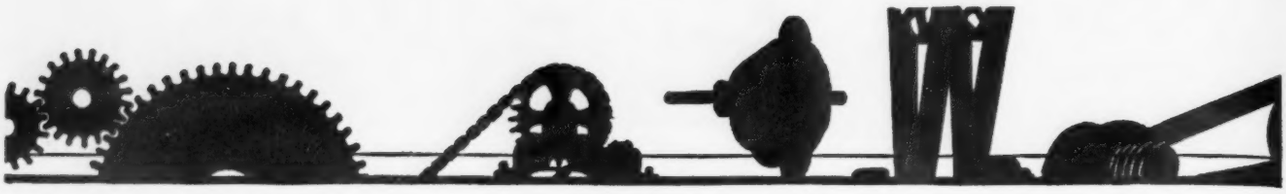
FEATURE OF TANK	GOODRICH	BEST COMPETITOR
Will life of lining be decreased if subjected to elevated temperatures?	Yes. This is a limitation applying to *all* rubber compounds. But Goodrich overcomes the difficulty —see "thermal insulating value of sheathing" below.	
Type protective sheathing recommended	Acidproof brick and cement.	
Thermal insulating value of sheathing	At least 60° F. temperature drop through 4″ sheathing assuming reasonably free circulation of air around tank and no insulation outside.	
Mechanical protection afforded by sheathing	Excellent. Used successfully in very roughest kind of service.	
Can tanks safely be moved from one location to another?	Yes.	
Is manufacturer free to choose and recommend best design of lining and sheathing or is his field restricted by others' patents?	Goodrich is free to furnish all possible variations of the basic design — steel-rubber-sheathing.	
Technical resources and research policy of manufacturer	Has been among the leaders for many years.	
Experience in rubber lining work	45 years. First to develop a satisfactory process of bonding rubber to steel.	
EXPERIENCE IN BUILDING STEEL PICKLING TANKS:		
Number of tanks operating	More than 200.	
Successful	100%.	
Acid Leakage	None.	
Repeat orders	Coming in constantly.	
Endorsement of users	Enthusiastic.	
Comparison by those who have used tanks of various manufacture	Invariably favorable to Goodrich.	
Knowledge, resourcefulness, engineering ability and willingness to render real service to customer in pickling field.	Acknowledged and utilized by many of the largest steel companies and engineering firms in the world. Names on request.	

There you are, gentlemen—an "official score card" for today's game—the all-important game of getting the most for your money. If you can think of any other questions, send them in—we want the list to be complete—and we will send answers and proof. And write, too, for a free sample of the revolutionary Goodrich Triflex lining. The B. F. Goodrich Co., Mechanical Rubber Goods Division, Akron, Ohio. (In Canada: Canadian Goodrich Co., Ltd., Kitchener, Ont.)

Rubber Lining STEEL

ALL *products problems* IN RUBBER

Power Drives



Try Electrical Control

UNDER the heading "What Would You Do?" in this department for Dec. 23, the difficulties of driving a foundry conveyor which jammed frequently were outlined. At first, jamming of the conveyor resulted in burning the flat drive belt and necessitated frequent replacement. By changing to multiple V-belts the cost of replacement was reduced.

In the Jan. 13 issue, page 38, the suggestion was made of using a break pin hub with silent chain. With this drive a small, easily replaceable pin breaks with excessive overload, thus permitting the driven chain sprocket to revolve freely on the shaft and so preventing serious damage to the chain.

W. A. Warrick, mechanical engineer, Diamond Chain & Mfg. Co., Indianapolis, further points out that the break pin costs only a fraction of the amount involved in a belt. He emphasizes that much less time is required for such pin replacements. Allis-Chalmers Mfg. Co. engineers state also that break pin hubs have been used to a considerable extent with V-belt drives for the protection of machines.

In commenting on the drive, Allis-Chalmers engineers add, "However, since the trouble in the case cited seems to occur quite frequently, the problem might possibly better be attacked from the electrical end by means of a suitable overload relay or circuit breaker, depending on the starting mechanism of the motor. All of this is an individual problem that would have to be carefully analyzed."

These comments emphasize the many solutions possible with troublesome drives. The best and sometimes the simplest solution of the trouble may lie elsewhere besides in the part that failed.

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Loose Pulley Bearings

OF ALL bearings in machine shop drives those in loose pulleys are more commonly subjected to severe use, abuse and neglect than any others. Even though all other overhead bearings are of antifriction type it is not uncommon to find maintenance men dragging a ladder around every few days, or perhaps more frequently, to lubricate the loose pulley bearings.

Assuming that setting the ladder, oiling the bearing, and removing the ladder takes 10 minutes per pulley, a fair estimate but not allowing for much visiting, lubrication alone would require about 5¼ 8-hour days, if performed only 250 times per year. This does not take into account interruption to machine time, as such oiling should be performed out of working hours, although often it is not. Nor does this include any maintenance or replacement time.

In contrast, two antifriction bearing loose pulleys (two bearings per pulley) in a New York plant operated over 11 years before one of the four bearings required replacement. Assuming that these pulleys each required ¼ day per year for servicing, probably a generous allowance, they still had an advantage of 55 days servicing labor saved. That alone would pay several times over for the more expensive bearing. Savings in lubricant, maintenance or replacement time and material, and the more intangible peace and contentment that goes with uninterrupted operation, are additional profits.

♦ ♦ ♦

Compressor Drives

WITH the almost universal use of compressed air in industrial plants the compressor becomes an important piece of equipment. The same is true of its drive.

The compressor, incidentally, is one piece of equipment where drive trouble usually can be traced to the faulty operation of the compressor. Especially is this true where the drive has operated satisfactorily for a period of years before showing signs of trouble.

Another feature of compressor operation is that faulty operation, even though not serious enough to cause drive failure, usually increases the power consumption without a corresponding increase in the amount of work or air delivered.

The most common causes of trouble result from the failure of valves to open or close properly, valves that stick or leak, or what is known as "wire drawing." When the inlet valves do not open or close properly the compressor uses power without receiving and delivering the full supply of air. When the outlet valve does not open or close properly the compressor is working against practically full pressure at the beginning of the stroke, instead of atmospheric pressure, and this pressure is increased to several times normal full pressure at the end of the stroke, if the outlet valve remains closed. Since power consumed depends largely upon the pressure built up much extra work is performed and power used without results.

Such conditions—valves sticking open or closed—are soon discovered, unless irregular in operation, because the air pressure in the tank falls. Where the outlet valve sticks partially open or wire drawing (leaks) occur the piston also works against excess pressure on the compression stroke with a corresponding overload and increased power consumption. When the "unloader" sticks the compressor starts under load.

Troubles from practically all these mechanical defects show up in an overloaded drive, motor heating, repeated operation of overload relays or blown fuses, belt slippage, chain wear, or other drive trouble, as well as excess power consumption. Replacement of the drive, alone, does not solve the difficulty.

Modern compressors are much less at fault than old type units, but many of the latter are still in everyday use. About the only easily located indications of faulty compressor operation are overheating of cooling water for closed valves and of outlet valves when wire drawing.

Where graphic records or even ammeter readings have been made of power consumption when a drive was installed another such record will prove quickly whether the drive has become seriously overloaded. Due to the rivalry between electrical and mechanical departments such proof is often necessary to establish responsibility for faulty operation where mechanical trouble in the machine causes difficulty in electrical or drive equipment.

BANTAM

SPECIFIED AGAIN

TAKE YOUR TOUGHEST BEARING JOB TO BANTAM

Bearing illustrated is 21" I.D. x 38" O.D. x 19½" long—Bearing Bore has 1" taper per foot

Bantam Bearings with taper bore were supplied for the new 4-HI — 21" and 45" by 43" Hot Mill in the Youngstown district.

This mill operates at a finishing speed of 2000 feet per minute.

Trade Mark Reg. U.S. Pat.Off.

BBB

THE BANTAM BALL BEARING CO.

SOUTH BEND, INDIANA

CHICAGO DETROIT HARTFORD MILWAUKEE NEW YORK PHILADELPHIA SEATTLE
NEW ORLEANS PITTSBURGH ROCHESTER, N. Y. TOLEDO WASHINGTON, D. C. YOUNGSTOWN

ONE OR A HUNDRED MILLION • 1/32" TO 60"

Progress in Steelmaking

Compound Is Noncorrosive

A sealing compound claimed to be nonsoluble, noncorrosive and heat resisting up to 400 degrees Fahr. has been marketed for fabrication, assembly and maintenance work in steel mills. The product made from a castor oil base, seals as perfectly as shellac yet never hardens, thus permitting gaskets to be used over again. When applied to threaded joints it affords easy disassembly of fuel, oil and gas lines. The product also serves as an efficient packing for pumps and as a belt dressing.

• • •

Registers Weight by Wire

Remote registration of weight recently was transmitted a limited distance over electric wires for the first time and scale engineers now foresee that it is only a step to increase the distance merely by using radio as a means of transmission. Applications of the new development are expected to be numerous in operations where actual work is remote from main offices, such as in many chemical, mining, blast furnace, coke oven and steelworks operations.

• • •

New Coating Is Developed

The problem of making paint adhere to galvanized sheets is claimed to have been solved by the development of new coating which is applied by brushing or spraying. The surface of the sheet first is cleaned and then lightly scoured with a fine grade of steel wool. Following the application of the coating, the surface is washed and dried and is ready for painting. The coating will not wash off, chip, nor corrode in the weather and is unaffected by baking pressures.

• • •

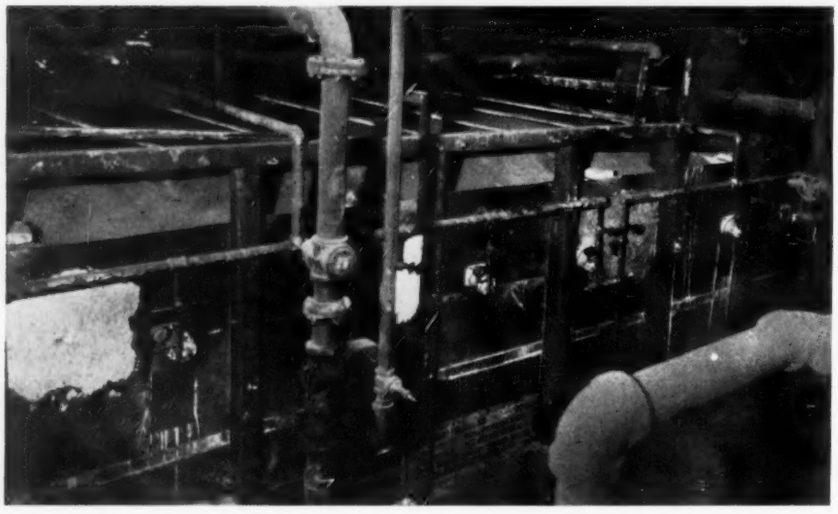
New Winder Prevents Kinks

Lamp cord used at ingot mold inspection stations is kept clean and without kinks by a recently devised winder. The unit requires little effort to operate. When the lamp is pulled to the desired location the winder takes the cord back slowly until a ratchet dog catches to hold at that particular length. In rewinding the cord is pulled slightly to release the ratchet; centrifugal force prevents the ratchet from catching until the motion is slowed down. By this arrangement lights always are within reach and accidents are minimized.

If you desire further information on any idea, announcement, lead or suggestion presented, please write us. Perhaps you know of an idea or "shop wrinkle" that has effected a reduction in operating costs at your plant. If so, won't you send it along?

The Editors

Insulating Furnace Roof Saves Fuel



Application of 4 inches of insulation on the roof of an annealing furnace serving an Ohio tubemaker has reduced the start-up time 2 hours, the fuel consumption 34 per cent and cold spots in furnace. The tubes are annealed in cast iron retorts in cycles of 6½ hours. The furnace operates 9 hours per day with 4 hours added for start-up time. The 9-inch firebrick lining is encased in steel plate as shown in the accompanying illustration. Natural gas is fired in side muffles, seven burners being used per side. Savings in the quantity of gas used and start-up labor amounted to $20.24 per day. The plastic insulation manufactured by Wyo-Lite Insulating Products, Cleveland, paid for itself in 19.3 days.

• • •

Indicates Depth of Coating

Thicknesses of nonmagnetic coatings such as porcelain enamel, paint, etc., which have been applied to or laid on flat sheets or plates of iron and steel, now can be measured by a newly introduced electric gage. The unit permits quick and convenient measurement of the thickness of the material not only at the edges but in the center or any other place where a flat surface slightly more than 1 inch diameter can be found. The thickness is read directly on an indicating instrument.

All Industry Benefits By Adoption of New Alloys and Better Methods

BY J. J. NELSON
Vice President and Sales Manager,
Cramp Brass & Iron Foundries Co., Philadelphia

FAILURE to investigate carefully the development of new alloys and to keep abreast of improved methods can cost a manufacturer or supplier an increase in profit. Old alloys, although they are giving satisfactory service, are outdated as soon as new alloys costing less are developed and applied successfully.

Engineers and others who have occasion to specify metals, particularly bronze or brass alloys, which enter the competitive field, will be interested in the following example of a saving one manufacturer recently made in a last minute change in his specification.

Overlooked New Alloy

Three manufacturers were invited to bid on certain equipment which included a purchase, among other materials, of approximately 145,000 pounds of bronze castings. These castings were to be made from three different patterns. In an installation of this kind it had been customary to make these castings of a mixture of phosphor bronze with a copper-tin base. This metal had been used on a number of occasions for similar parts and it had given good service. Because of this service it was considered by all of the manufacturers as being the logical metal for that purpose. The price for these bronze castings had been obtained in the past at a fixed differential over the price of copper and tin and consequently it was not considered necessary to obtain prices from suppliers in preparing estimates.

After considerable discussion among the engineers and salesmen of this particular manufacturer they agreed to put in a bid which was the equivalent of their manufacturing cost including complete overhead. In other words, they were perfectly willing to accept the job without any profit because they were in need of the work in their shops. Bids were opened in due course and this manufacturer was found to be the low bidder. The award was made and the chief engineer, his estimators and production engineer consulted regarding their shop specifications and production orders. At this time several material suppliers were called in by the purchasing department and arrangements made to close for all requirements, including the bronze castings.

Fortunately, we were invited to participate in the bidding and in going over the specification and service to which these bronze castings were subject it was found that instead of using the expensive phosphor bronze mixture, which was originally intended, an alloy lighter in weight and considerably lower in cost, and which would give as good, if not better, service, could be used. While we will not disclose the difference in the selling price it is interesting to compare the actual cost of the two metals involved. The metal originally specified, with copper at 9 cents per pound and tin at 54 cents per pound, cost 13.95 cents per pound for the contained metals, that is, raw material values not including melting and molding cost nor metal loss; whereas the substitute, which we were in a position to offer, cost on the same basis, about 9 cents per pound, or a saving of approximately 5 cents per pound on raw metal values alone. In addition to this there was a further saving in the weight of the metal to be considered. With this substitute the original estimated weight was reduced to 133,000 pounds instead of 145,000 pounds. This was brought about by the difference in weight per cubic inch of the two metals.

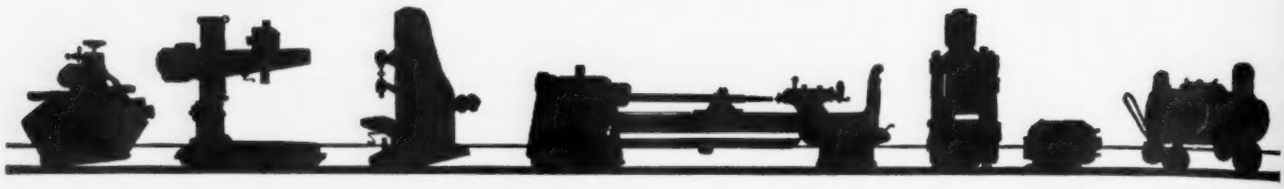
The responsibility for the installation rested with this manufacturer so that there was no necessity for him to ask for a change in the specifications to make the substitution. After due consideration our recommendations were accepted and as a result the manufacturer started the job with an unexpected saving.

Similar Opportunities Exist

This is an outstanding example of the opportunities that exist for manufacturers to profit by considered application of metals. The opportunity is not confined to the application of brass or bronze; it applies also to iron, which, since the advent of the electric furnace and the perfection of the several alloys, including those containing nickel, copper, molybdenum and chromium, has given industry new applications for those metals.

An examination of "A List of Alloys" by William Campbell clearly will bring to light the great number of bronze or brass alloys now on the market and in general use for certain applications. A study of this list will indicate that the cost of production in the several bronze foundries is increasing because of the increasing use of several different alloys for the same or similar application. If industry would endeavor to standardize in this respect a marked reduction in casting cost would result. Consider for a moment the cost of producing a casting weighing 15 pounds, of a mixture for which the particular foundry has no other specification. It requires a special crucible, a special heat, special cleaning and special handling. In all probability, the foundry in which this casting is to be made is running an alloy which would properly serve the purpose, and if the casting were made of that alloy a reduction in cost would result to both the purchaser and the supplier, and a more prompt delivery effected.

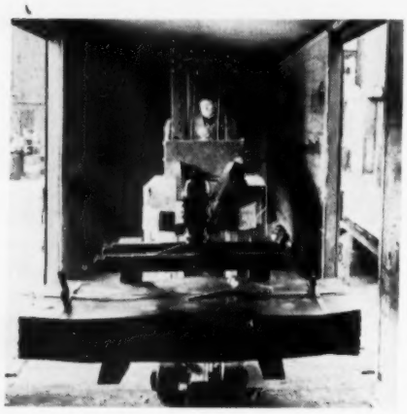
New Equipment



Swivel Fork Attachment—

Baker-Raulang Co., Cleveland, has developed a swivel fork attachment which makes its standard 5-ton capacity high-lift truck a multipurpose unit that can be used for general materials handling in the plant. One of its interesting uses is shown in the accompanying illustration. Here it is being employed in the unloading of packaged sheet steel. One man can handle steel in bundles up to 3 tons in weight, 30 inches in width and 96 inches in length.

With the packs of sheets loaded crosswise in the railroad car, the forks are slipped under the pack. The platform with the forks then is raised to permit the pack to clear the trailing axles as illustrated. Subsequently the forks and load are swung 90 degrees to place the pack lengthwise of the truck. In this position the pack of steel can be carried out of the car door and into a storage room where it can be tiered to any height within the limit of the truck lift.



Baker-Raulang truck attachment handles packaged sheet steel

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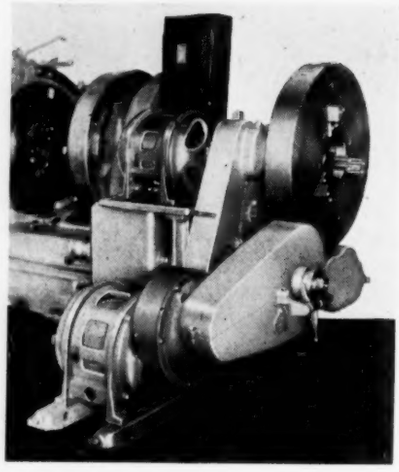
Dual Speed Range for Pipe Threading Machine—

Landis Machine Co. Inc., Waynesboro, Pa., has developed a dual speed arrangement for its pipe threading and cutting machine with receding chaser die head. This development was introduced to meet the demand for equipment to pull joints tight on drill pipe. For this work, generally referred to as "bucking up" tool joints, a pipe threading machine usually is employed. As shown in the accompanying illustration, two motors are used. This machine is regularly equipped with a 1200 r.p.m. motor which provides spindle speeds through the gear box ranging from 8 to 28 r.p.m. for thread cutting. The second motor also is a 1200 r.p.m. unit with a geared head for 260 r.p.m. to provide a spindle speed of 2 r.p.m. for "bucking up" tool joints. The switch is so wired that it is impossible to start both motors simultaneously. Slow speed and positive drive insure the pulling of a tight joint.



Landis pipe threading, cutting machine embodies dual speed arrangement for "bucking up" tool joints

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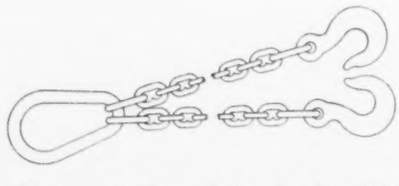
Sling Chain—

Columbus McKinnon Chain Corp., Tonawanda, N. Y., is marketing an alloy steel sling chain made with short narrow links, reducing to minimum the danger of bending or gouging when used around sharp corners. The accompanying illustration shows the type D double branch with slip hooks. All fitting such as hooks, end, center and joining links are made from Herc-Alloy steel, and the completed chain is heat treated.

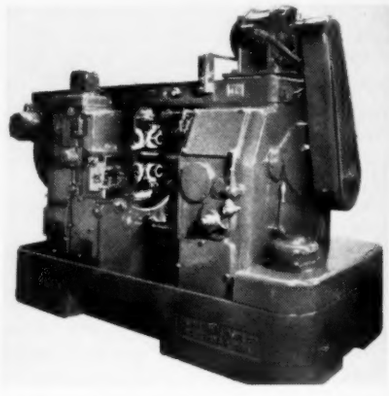


Alloy steel sling chain developed by Columbus McKinnon Chain Corp.

♦ ♦ ♦

Automatic Chucking Machines—

National Acme Co., 170 East 131 street, Cleveland, is bringing out an automatic chucking machine designated model RP, available in both four and six-spindle types. The unit, shown herewith, has a capacity for 8-inch swing and as work of this size often is heavy, loading is done in the upper front position. The pan is arranged so that the operator can stand close to the machine, putting the piece into the chuck with his right hand, without reaching away from his body. Fatigue and strain thus are avoided. The centerline of the spindle at the loading position actually is only 44 inches above the floor. A pushbutton station mounted near his left hand permits control of the electric chuck, so that while he holds the piece in the chuck with one hand, he can close or open the chuck jaws at will. In order to reduce the time required for set-up, the machine is so designed



National Acme automatic chucking machine is compact

A GREAT ADVANCE IN *Stainless Steel* WELDING

The New OXWELD NO. 28 COLUMBIUM-BEARING 18-8 WELDING ROD*

Has Been Made For: (1) Welding columbium or titanium-bearing stainless steels of the austenitic chromium-nickel type. (2) Welding untreated stainless steels and producing good ductility and malleability in the welds.

Produces Better Welds Because Columbium: (1) Assures high cleanliness. (2) Does not excessively burn out during welding. (3) Counteracts effects of carbon pick-up in the weld metal.

*Patent Applied For

The Columbium in this rod assures corrosion-resistant welds retaining all the advantages of the original stainless steel. Where a columbium- or titanium-bearing base metal is used, the usual heat treatment is completely avoided.

Be sure to consult the Linde Sales Office in your city or write to the Company at 30 East 42nd Street, New York, N. Y., for full information. Address—The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation. In Canada — Dominion Oxygen Co., Ltd., Toronto.

Everything for Oxy-Acetylene Welding and Cutting

LINDE OXYGEN • PRESTO-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES

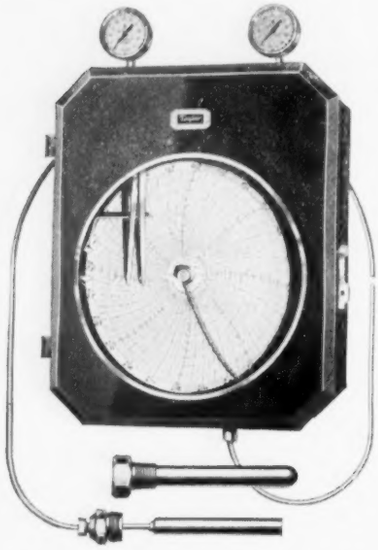
FROM PRODUCTS OF UNITS OF UCC UNION CARBIDE AND CARBON CORPORATION LINDE UNION CARBIDE

that by the removal of a few guards, all cams are quickly accessible and the space for the setting of tools is entirely free from obstructions.

♦ ♦ ♦

Temperature Control—

Taylor Instrument Cos., Rochester, N. Y., have perfected a separable well tube system, known as the



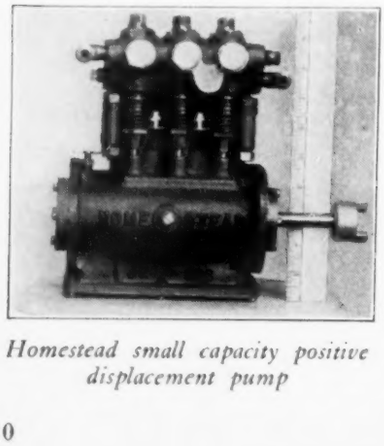
Taylor "Thermospeed" separable well tube system

"Thermospeed," having a speed response closely approaching that of their bare bulb tube system. This innovation is of wide interest due to the fact that the majority of plants have a temperature measurement or control application that would benefit through its use, the company declares. The development, shown herewith, assures closer regulation from Taylor controllers because the corrective action of the controller occurs at the slightest tendency of a departure from the control point.

♦ ♦ ♦

Small Reciprocating Pump—

Homestead Valve Mfg. Co. Inc., Coraopolis, Pa., is announcing a small capacity positive displacement



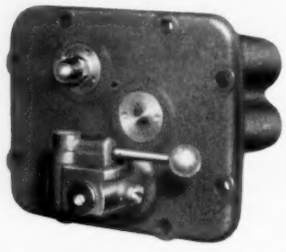
Homestead small capacity positive displacement pump

pump to fill the need for a small unit to handle fluids at a relatively high pressure. Depending upon the speed of the pump, shown herewith, the capacity may be varied from about 15 to 120 gallons per hour. It is a single acting plunger type having three cylinders. Applications include boiler feed, boiler compound injection, condensate returns, small hydraulic presses, fuel oil pumps for oil burners, the pumping of chemicals, air conditioning equipment and control apparatus.

♦ ♦ ♦

Hydraulic Pump and Valve—

Sundstrand Machine Tool Co., Rockford, Ill., is announcing a new hydraulic pump and valve as well as a new circuit for machine tool feeds and other applications. The hydraulic pump consists of a variable displacement pump which gives two adjustable feeds, and a constant displacement pump that provides rapid traverse. Both pumps are incorporated in a single housing and driven by a single shaft. The new control valve



Sundstrand hydraulic control valve or panel

or panel, shown herewith, provides rapid approach, feed, adjustable dwell and rapid return. Adjustable dogs control the operation of the feed and rapid traverse sequence. Pump feed or rapid traverse between intermittent cuts also may be obtained by means of trip dogs. The hydraulic circuit is self-locking and provides smooth, uniform feed, shockless high-speed traverses and prevents the tool from jumping ahead at the completion of a cut or during an intermittent cut.

♦ ♦ ♦

Wet Dust Collector—

Claude B. Schneible Co., 3951 Lawrence avenue, Chicago, announces an improved line of wet dust collectors, one of which is shown herewith. These new towers, similar in external appearance to those previously offered, now are made with six dust impingement plates, the seventh of the series being designed for use as a water entrainment separator to gather the remaining moisture from the clean air before it is exhausted. Other major design changes include a dirty air baffle under the first impingement plate,

Schneible dust collector employs the wet method of dust suppression

wearing strip reinforcing, an air directional baffle on the inlet side in the cyclone chamber, and a screened strainer on the sludge discharge line.

♦ ♦ ♦

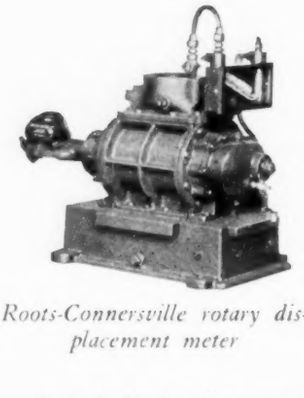
Belting—

Victor R. Clark Belting Co., 605 West Washington boulevard, Chicago, has developed a new type of round leather belt with a special hook groove on opposite diameters of the belt. Hooks are buried in the groove on one side and the ends clinched in the opposite groove, thus placing the entire hook below the surface of the belt. This insures a smooth joint without the hazard of injury inasmuch as the hook end cannot catch in the operator's clothing or snag a mechanics hand. The belt is obtainable in four diameters, ranging from ¼ to ⅜ inch.

♦ ♦ ♦

Rotary Displacement Meter—

Roots-Connersville Blower Corp., Connersville, Ind., has extended its range of sizes of rotary displacement meters by adding a new smaller unit, the 2½ by 7 meter shown here-



Roots-Connersville rotary displacement meter

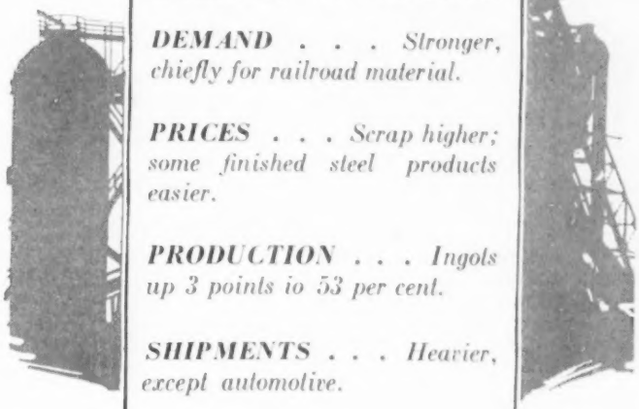
with. It is built for line pressures up to 25 pounds per square inch, having a normal capacity of 5000 cubic feet per hour at 1 inch water gage differential, but maintaining commercial accuracy on loads ranging from 10 to 150 per cent of normal rating. The meter is applicable to small gas plant operation, industrial and commercial gas consumer installations, low pressure natural gas wells and transmission lines, chemical processes, or measuring gas engine fuel consumption.

Rail, Miscellaneous Demands Lift Steel Rate

Production at 53 Per Cent

Despite Automotive Lag;

Mixed Trend in Prices



MARKET IN TABLOID

DEMAND . . . *Stronger, chiefly for railroad material.*

PRICES . . . *Scrap higher; some finished steel products easier.*

PRODUCTION . . . *Ingots up 3 points to 53 per cent.*

SHIPMENTS . . . *Heavier, except automotive.*

INDICATING underlying strength in iron and steel demand, steelworks operations last week advanced 3 points to 53 per cent, with further improvement in railroad and general manufacturing requirements.

This is the first evidence of a definite trend in production this year, and as it has developed despite slackened consumption in the automobile industry and adverse weather conditions, steelmakers believe it represents a broad movement which points to expansion late this month or early in March.

The principal gain in steelworks operations last week was at Chicago, up 6 points to 58 per cent, where rail mills have accumulated orders for some schedules throughout the first half, and where buying for public works projects, farm implements and household equipment holds at a high level. Birmingham rail mills also have benefitted through recent awards, the steel rate there advancing 12 points to 63 per cent. Pittsburgh was up 1 to 40, Cleveland 2½ to 61½, Cincinnati 5 to 80, Youngstown 1 to 61, Wheeling 3 to 81, while other districts were unchanged.

Cold weather and resultant rush for fuel has emphasized a general freight car shortage, which roads have been trying to overcome with repairs and new purchases. For this alone, since Jan. 1 about 150,000 tons of steel has been placed, while rail orders have totaled more than 270,000 tons.

Chicago, Milwaukee, St. Paul & Pacific last week launched a $5,000,000 buying program, to place 500 gondola cars, 1000 automobile cars, 39 coaches. This week it will buy 30,000 tons of rails. Bessemer & Lake Erie and Union railroads, Steel corporation subsidiaries, ordered 3000 hopper and gondola cars and 24 locomotives, while 10,500 tons of tie plates were distributed by Union Pacific and Northern Pacific.

Important structural orders recently have developed from railroad bridge and grade elimination projects, although structural steel awards dropped to 17,093 tons. A. O. Smith Corp., Milwaukee, booked 17,000 tons of 20-inch steel pipe for an Omaha line.

Automobile production showed the sharpest drop since introduction of new models—off 16,000 units to 70,000—but there were signs of preparations for larger output, in releases on prior orders and new specifications for sheets and strip which require several weeks in processing.

Mixed trends are more evident in prices. Raw materials are strong, but in finished steel, competition between producers more than pressure from consumers appears to be leading up to an open market situation such as prevailed prior to the steel code.

Scrap prices have risen almost continuously for eight months, and last week STEEL's composite was up 13 cents to $13.42—$1.76 higher than a year ago. Carnegie-Illinois Steel Corp. took 30,000 tons of No. 1 heavy melting steel, ordinary grades at $14.75; railroad, $15.25. Connellsville foundry coke was up 25 cents a ton; fluorspar for all-rail shipment advanced $1.25.

On 4500 tons of reinforcing bars for the Fort Peck, Montana, dam 11 producers bid uniformly $6 a ton under the official market. On 3800 kegs of nails for a housing project an eastern mill bid $7.20 a ton under the Pittsburgh base. Only in the Northwest, where concessions of $4 a ton are reported, have plates, shapes, and bars been affected. A new list of extras has been issued on semifinished steel, principally reclassifying terminology, while the announced $2 a ton advance has not yet become effective.

Daily average steel ingot output in January was, as indicated last week, down 8 per cent to 123,272 gross tons, while January's total, 3,049,439 tons, compared with 3,081,807 tons in December.

STEEL'S iron and steel price composite is up 4 cents to $33.44. The finished steel index remains $53.70.

COMPOSITE MARKET AVERAGES

	Feb. 8	Feb. 1	Jan. 25	One Month Ago Jan., 1936	Three Months Ago Nov., 1935	One Year Ago Feb., 1935	Five Years Ago Feb., 1931
Iron and Steel	$33.44	$33.40	$33.38	$33.34	$33.15	$32.54	$31.64
Finished Steel	53.70	53.70	53.70	53.70	53.70	54.00	49.42
Steelworks Scrap	13.42	13.29	13.21	13.15	12.92	11.66	10.39

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

A COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Feb. 8, 1936	Jan., 1936	Nov., 1935	Feb., 1935
Steel bars, Pittsburgh	1.85c	1.85	1.85	1.80
Steel bars, Chicago	1.90	1.90	1.90	1.85
Steel bars, Philadelphia	2.16	2.16	2.16	2.09
Iron bars, Terre Haute, Ind.	1.75	1.75	1.75	1.75
Shapes, Pittsburgh	1.80	1.80	1.80	1.80
Shapes, Philadelphia	2.01½	2.01½	2.01½	2.00½
Shapes, Chicago	1.85	1.85	1.85	1.85
Tank plates, Pittsburgh	1.80	1.80	1.80	1.80
Tank plates, Philadelphia	2.00	1.99	1.99	1.98½
Tank plates, Chicago	1.85	1.85	1.85	1.85
Sheets, No. 10, hot rolled, Pitts.	1.85	1.85	1.85	1.85
Sheets, No. 24, hot ann., Pitts.	2.40	2.40	2.40	2.40
Sheets, No. 24, galv., Pitts.	3.10	3.10	3.10	3.10
Sheets, No. 10, hot rolled, Gary	1.95	1.95	1.95	1.95
Sheets, No. 24, hot anneal., Gary	2.50	2.50	2.50	2.50
Sheets, No. 24, galvan., Gary	3.20	3.20	3.20	3.20
Plain wire, Pittsburgh	2.30	2.30	2.30	2.30
Tin plate, per base box Pitts.	5.25	5.25	5.25	5.25
Wire nails Pitts.	2.40	2.40	2.40	2.60

Semifinished Material

Sheet bars, open-hearth, Youngs.	$30.00	30.00	29.50	28.00
Sheet bars, open-hearth, Pitts.	30.00	30.00	29.50	28.00
Billets, open-hearth, Pittsburgh	29.00	29.00	28.50	27.00
Wire rods, Pittsburgh	40.00	29.00	38.00	38.00

Pig Iron

	Feb. 8, 1936	Jan., 1936	Nov., 1935	Feb., 1935
Bessemer, del. Pittsburgh	$20.8132	20.8132	20.8132	19.76
Basic, Valley	19.00	19.00	19.00	18.00
Basic, eastern, del. eastern Pa.	20.8132	20.8132	20.8132	19.76
No. 2 fdry., del. Pittsburgh	20.3132	20.3132	20.3132	19.26
No. 2 fdry., Chicago	19.50	19.50	19.50	18.50
Southern No. 2, Birmingham	15.50	15.50	14.75	14.50
Southern No. 2, del. Cincinnati	20.2007	20.2007	20.2007	19.13
No. 2X eastern, del. Phila.	21.6882	21.6882	21.6882	20.63
Malleable, Valley	19.50	19.50	19.50	18.50
Malleable, Chicago	19.50	19.50	19.50	18.50
Lake Sup. charcoal, del. Chi.	25.2528	25.2528	25.2528	24.04
Ferromanganese, del. Pitts.	80.13	90.13	90.13	89.79
Gray forge, del. Pittsburgh	19.6741	19.67	19.67	18.63

Scrap

Heavy melting steel, Pittsburgh	$14.75	14.50	13.65	13.25
Heavy melt. steel, No. 2, east Pa.	11.75	11.37½	11.00	10.15
Heavy melting steel, Chicago	13.75	13.40	13.20	11.65
Rails for rolling, Chicago	15.25	14.25	14.30	12.55
Railroad steel specialties, Chicago	15.25	14.40	13.75	12.50

Coke

Connellsville, furnace, ovens	$3.50	3.50	3.55	3.60
Connellsville, foundry, ovens	4.25	4.00	4.35	4.60
Chicago, by-product foundry, del.	9.75	9.75	9.75	9.25

Steel, Iron, Raw Material, Fuel and Metals Prices

Except when otherwise designated, prices are base, f.o.b. cars. Asterisk denotes price change this week

Sheet Steel

Hot Rolled No. 10, 24-48 in.

Pittsburgh	1.85c
Gary	1.95c
Chicago, delivered	1.98c
New York, del.	2.20c
Philadelphia, del.	2.16c
Birmingham	2.00c
St. Louis, del.	2.18c
Pacific ports, f.o.b. cars, dock	2.40c

Hot Rolled Annealed No. 24

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, delivered	2.45c-2.60c
New York, del.	2.75c
Philadelphia, del.	2.71c
Birmingham	2.55c
St. Louis, del.	2.72c
Pacific ports, f.o.b. cars, dock	3.05c

Galvanized No. 24

Pittsburgh	3.10c
Gary	3.20c
Chicago, delivered	3.23c
Philadelphia, del.	3.41c
New York, del.	3.45c
Birmingham	3.25c
St. Louis, del.	3.43c
Pacific ports, f.o.b. cars, dock	3.70c

Tin Mill Black No. 28

Pittsburgh	2.75c
Gary	2.85c
St. Louis, delivered	3.08c

Cold Rolled No. 10

Pittsburgh	2.50c
Gary	2.60c
Detroit, delivered	2.55c-2.70c
Philadelphia, del.	2.81c
New York, del.	2.85c
Pacific ports, f.o.b. cars, dock	3.10c

Cold Rolled No. 20

Pittsburgh	2.95c
Gary	3.05c
Detroit, delivered	3.00c-3.15c
Philadelphia, del.	3.26c
New York, del.	3.30c

Enameling Sheets

Pittsburgh, No. 10	2.50c
Pittsburgh, No. 20	3.10c
Gary, No. 10	2.60c
Gary, No. 20	3.20c

Tin and Terne Plate

Gary base, 10 cents higher.

Tin plate, coke base (box) Pittsburgh	$5.25
Do., waste-waste	2.75c
Do., strips	2.50c
Long ternes, No. 24 unassorted, Pitts.	3.40c
Do., Gary	3.50c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	23.00	24.00
Plates	26.00	28.00
Sheets	33.00	35.00
Hot strip	20.75	22.75
Cold strip	27.00	29.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	17.00	18.50	21.00	26.00
Plates	20.00	21.50	24.00	29.00
Sheets	25.00	28.00	31.00	35.00
Hot strip	15.75	16.75	21.75	26.75
Cold stp.	20.50	22.00	27.00	35.00

Steel Plates

Pittsburgh	1.80c
New York, del.	2.09c
Philadelphia, del.	1.99c
Boston, delivered	2.22c
Buffalo, delivered	2.05c
Chicago or Gary	1.85c
Cleveland, del.	1.99½c
Birmingham	1.95c
Coatesville, base	1.90c
Sparrows Pt., base	1.90c
Pacific ports, f.o.b. cars, dock	2.35c
St. Louis, delivered	2.08c

Structural Shapes

Pittsburgh	1.80c
Philadelphia, del.	2.01½c
New York, del.	2.06½c
Boston, delivered	2.20½c
Bethlehem	1.90c
Chicago	1.85c
Cleveland, del.	2.00c
Buffalo	1.90c
Gulf Ports	2.20c
Birmingham	1.95c
Pacific ports, f.o.b. cars, dock	2.35c

Bars

Soft Steel

(Base, 5 to 25 tons)

Pittsburgh	1.85c
Chicago or Gary	1.90c
Duluth	2.00c
Birmingham	2.00c
Cleveland	1.90c
Buffalo	1.95c
Detroit, delivered	2.00c
Pacific ports, f.o.b. cars, dock	2.40c
Philadelphia, del.	2.16c
Boston, delivered	2.27c
New York, del.	2.20c
Pitts., forg. qual.	2.10c

Rail Steel

To Manufacturing Trade

Pittsburgh	1.70c
Chicago or Gary	1.75c
Moline, Ill.	1.75c
Cleveland	1.75c
Buffalo	1.80c

Iron

Troy, N. Y.	1.70c
Terre Haute, Ind.	1.75c
Chicago	1.80c
Philadelphia	2.06c
Pittsburgh, refined	2.75-7.50c

Reinforcing

New billet, straight lengths, quoted by distributors.

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.10c
Gulf ports	2.45c
Pacific coast ports f.o.b. cars dock	2.45c
Philadelphia, del.	2.11c-2.16c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	1.90c
Chicago, Buffalo, Cleveland, Birm., Young.	1.95c
Gulf ports	2.30c

Wire Products

Wire Products (Prices apply to straight or mixed carloads; less carloads $4 higher; less carloads fencing $5 over base column.)

Base Pitts.-Cleve. 100 lb. keg.	
Standard wire nails	$2.40
Cement coated nails	2.40
Galvanized nails, 15 gage and coarser	4.40
do. finer than 15 gage	4.90

(Per pound)

Polished staples	3.10c
Galvanized fence staples	3.35c
Barbed wire, galv.	2.80c
Annealed fence wire	2.45c
Galvanized fence wire	2.80c
Woven wire fencing (base column, c.l.)	$61.00

To Manufacturing Trade

Plain wire, 6-9 gage	2.30c

Anderson, Ind. (merchant products only) and Chicago up $1; Duluth up $2; Birmingham up $3.

Spring wire, Pittsburgh or Cleveland	2.90c

Do., Chicago up $1, Worcester, $2.

Cold-Finished Carbon Bars and Shafting

Base, Pitts., one size, shape, grade, shipment at one time to one destination

10,000 to 19,999 lbs.	2.10c
20,000 to 59,999 lbs.	2.05c
60,000 to 99,999 lbs.	2.00c
100,000 lbs. and over	1.97½c

Gary, Ind., Cleve., Chi., up 5c; Buffalo, up 10c; Detroit, up 20c; eastern Michigan, up 25c.

Alloy Steel Bars (Hot)

Pittsburgh, Buffalo, Chicago, Massilon, Canton, Bethlehem 2.45c

Alloy S.A.E.	Diff.	Alloy S.A.E.	Diff.
2000	0.25	3100	0.55
2100	0.55	3200	1.35
2300	1.50	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo.	0.50
4600 0.20 to 0.30 Mo, 1.25-1.75 Ni.	1.05
5100 0.80-1.10 Cr	0.45
5100 Cr. spring	base
6100 bars	1.20
6100 spring	0.70
Cr., Ni., Van.	1.50
Carbon Van.	0.95
9250 carbon base plus extras	

Piling

Pittsburgh	2.15c
Chicago, Buffalo	2.25c

Strip and Hoops

Hot strip to 23⅛-in.	
Pittsburgh	1.85c
Chicago or Gary	1.95c
Birmingham base	2.00c
Detroit, delivered	2.05c
Philadelphia, del.	2.16c
New York, del.	2.20c
Cooperage hoop,	
Pittsburgh	1.95c
Chicago	2.05c
Cold-strip, Pitts. Cleve.	2.60c
Detroit, del.	2.65c
Worcester, Mass.	2.80c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$36.37½
Relay rails, Pitts.	
20-45 lbs.	$28.00
45-50 lbs.	$25.00
50-60 lbs.	$26.00
70-75 lbs.	$24.50
80-90 lbs.	$26.00
100 lbs.	$27.00
Light rails, billet qual. Pitts., Chi.	$35.00
Do., reroll, qual.	34.00
Angle bars, billet, Gary, Ind., So. Chi.	2.55c
Do., axle steel	2.10c
Spikes, R. R. base	2.60c
Track bolts, base	3.60c
Tie plates, base	1.90c

Base, light rails 25 to 40 lbs.; 50 to 60 lbs. inclusive up $2; 16 and 20 lbs., up $1; 12 lbs. up $2; 8 and 10 lbs., up $5. Base railroad spikes 200 kegs or more; base tie plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade for all case lots, Dec. 1, 1932, lists, 10% extra for less full containers.

Carriage and Machine

½ x 6 and smaller	70-10-5 off
Do. larger	70-10 off
Tire bolts	55 off

Plow Bolts

All sizes	70-10 off

Stove Bolts

In packages with nuts attached	72½-10 off;
in packages with nuts separate	72½-10-5 off;
in bulk	82½ off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.
Step bolts	65-5 off
Elevator bolts	65-5 off

Nuts

S. A. E. semifinished hex.; ½ to ⅞-inch	60-20-15 off
Do., ½ to 1-inch	60-20-15 off
Do., over 1-inch	60-20-15 off

Hexagon Cap Screws

Milled	80-10-10 off
Upset, 1-in., smaller	85 off

Square Head Set Screws

Upset, 1-in., smaller	75-10 off
Headless set screws	75 off

Rivets, Wrought Washers

Struc., c. l., Pittsburgh, Cleveland	2.90c
Struc., c. l., Chicago	3.00c
⅞-in. and smaller, Pitts., Chi., Cleve.	70 and 5 off
Wrought washers, Pitts., Chi., Phila., to jobbers & large nut, bolt mfrs.	$6.25 off

Cut Nails

Cut nails, Pitts.; (10% discount on size extras)	$2.75
Do. less carloads, 5 kegs or more, no discount on size extras	$3.05
Do., under 5 kegs; no disc. on size extras	$3.20

Pipe and Tubing

Base $200 net ton, except on standard commercial seamless boiler tubes under 2 inches and cold drawn seamless tubing.

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ points less. Wrought pipe, Pittsburgh.

Butt Weld

In.	Blk.	Galv.
Steel		
¼ and ⅜	53½	35
½	58½	47
¾	62	52
1—3	64	55
Iron		
½	31½	15
¾	36½	20½
1—1¼	39½	25½
2	41½	26

Lap Weld

Steel		
2	60	51
2½—3	63	54
3½—6	65	56
7 and 8	64	54
9 and 10	63½	53½
Iron		
2	37	22½
2½—3½	38	25
4—8	40	28½

Line Pipe

Steel	
½, butt weld	57½
⅛-inch butt weld	50½
¼—⅜, butt weld	52½
¾, butt weld	61
1—3, butt weld	63
2-inch, lap weld	59
2½—3, lap weld	62
3½—6, lap weld	64
7—8, lap weld	63
Iron	

⅛—1½ inch, black and galv. take 4 pts. over; 2½—6 inch 2 pts. over discounts for same sizes, standard pipe lists, 8—12-inch, no extra.

Boiler Tubes

C. L. Discounts, f.o.b. Pitts.

Lap Weld Steel		Charcoal Iron	
2—2¼	33	1¾	8
2½—2¾	40	2—2¼	13
3	47	2½—2¾	16
3¼—3½	50	3	17
4	52	3¼—3½	18
4½—5	42	4	20
		4½	21

In lots of a carload or more, above discounts subject to preferential of two 5% and one 7½% discount on steel and 10% on charcoal iron.

Lapwelded steel: 200 to 9999 pounds, ten points under base, one 5% and one 7½%. Under 2000 pounds 15 points under base, one 5% and one 7½%. Charcoal iron: 10,000 pounds to carloads, base less 5%; under 10,000 lbs., 2 points under base.

Seamless Boiler Tubes

Under date of May 15 in lots of 40,000 pounds or more for cold-drawn boiler tubes and in lots or 40,000 pounds or feet or more for hot-finished boiler tubes, revised prices are quoted for 55 cold-drawn boiler tube sizes ranging from ¼ to 6-inch outside diameter in 30 wall thicknesses, decimal equivalent from 0.035 to 1.000, on a dollars and cents basis per 100 feet and per pound. Less-carloads revised as of July 1, 1935, card.

Hot-finished carbon steel boiler tube prices also under date of May 15 range from 1 through 7 inches outside diameter, inclusive, and embrace 47 size classifications in 22 decimal wall thicknesses ranging from 0.109 to 1.000, prices also being on a lb. and 100 ft. basis.

Seamless Tubing

Cold drawn; f.o.b. mill disc.

100 ft. or 150 lbs.	32%
15,000 ft. or 22,500 lbs.	70%

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$39.00-40.00
4-in., Birmingham	42.00-43.00
4-in., Chicago	50.40-51.40
6 to 24-in. Chicago	47.40-48.40
6-in. & over, east. fdy.	43.00
Do., 4-in.	46.00

Class A pipe $3 over Class B Stnd. fitgs., Birm. base, $100.00

Semifinished Steel

Billets and Blooms

4 x 4-inch base; gross ton

Pitts., Chi., Cleve., and Youngstown	$29.00
Philadelphia	34.67
Duluth	31.00

Forging Billets

6 x 6 to 9 x 9-in., base

Pitts., Chi., Buff.	35.00
Forging, Duluth	37.00

Sheet Bars

Pitts., Cleve., Young., Chi., Buff., Canton, Sparrows Pt.	30.00

Slabs

Pitts., Chi., Cleve., Young.	29.00

Wire Rods

(Common; combination up $2)

Pitts., Cleveland	40.00
Chicago	41.00
Worcester, Mass.	42.00

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Point	1.80c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.50- 3.65
*Connellsville, fdry.	4.25
Connel., prem. fdry.	5.50- 5.75
New River fdry.	6.00
Wise county fdry.	4.45- 5.00
Wise county fur.	4.00- 4.50

By-Product Foundry

Newark, N. J., del.	9.70-10.15
Chi., ov., outside del.	9.00
Chicago, del.	9.75
New England, del.	11.50
St. Louis, del.	10.00
Birmingham, ovens	6.50
Indianapolis, del.	9.40
Cincinnati, del.	9.50
Cleveland, del.	9.75
Buffalo, ovens	7.50- 8.00
Detroit, ov., out. del.	9.00
Philadelphia, del.	9.38

Coke By-Products

Per gallon, producers' plants.

	Tank lots	Spot
Pure and 90% benzol		18.00c
Toluol		30.00c
Solvent naphtha		30.00c
Commercial xylol		30.00c

Per lb. f.o.b. New York.

Phenol (200 lb. drums)	16.30c
Do. (100 lbs.)	17.30c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls., to jobbers	6.75c

Per 100 lb. Atlantic seaboard

Sulphate of ammonia	$1.20

†Western prices, ½-cent up.

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25; 50c diff. for each 0.25 below 1.75. Gross tons.

Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
Bethlehem, Pa.	$20.50	$21.00	$20.00	$21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Birmingham, Ala., southern del.	15.50	15.50	14.50	21.00
Buffalo	19.50	20.00	18.50	20.50
Chicago	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Detroit	19.50	19.50	19.00	20.00
Duluth	20.00	20.00	.....	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Everett, Mass.	20.50	21.00	20.00	21.50
Hamilton, O.	19.50	19.50	19.00	.....
Jackson, O.	20.25	20.25	19.75	.....
Neville Island, Pa.	19.50	19.50	19.00	20.00
Provo, Utah	17.50	.....	17.00	.....
Sharpsville, Pa.	19.50	19.50	19.00	20.00
Sparrows Point, Md.	20.50	.....	20.00	.....
Swedeland, Pa.	20.50	21.00	20.00	21.50
Toledo, O.	19.50	19.50	19.00	20.00
Youngstown, O.	19.50	19.50	19.00	20.00
Delivered from Basing Points:				
Akron, O., from Cleveland	20.76	20.76	26.26	21.26
Baltimore from Birmingham	21.08	.....	19.96	.....
Boston from Birmingham	20.62	.....	20.50	.....
Boston from Everett, Mass.	21.00	21.50	20.50	22.00
Boston from Buffalo	21.00	21.50	20.50	22.00
Brooklyn, N. Y., from Bethlehem	22.93	23.43	.....	.....
Brooklyn, N. Y., from Bmghm.	22.50	.....	.....	.....
Canton, O., from Cleveland	20.76	20.76	20.26	21.26
Chicago from Birmingham	†19.72	.....	19.60	.....
Cincinnati from Hamilton, O.	20.58	20.58	20.08	.....
Cincinnati from Birmingham	20.20	.....	19.20	.....
Cleveland from Birmingham	19.62	.....	19.12	.....
Indianapolis from Hamilton, O.	21.93	21.93	21.43	22.43
Mansfield, O., from Toledo, O.	21.26	21.26	20.76	21.76
Milwaukee from Chicago	20.57	20.57	20.07	21.07
Muskegon, Mich., from Chicago Toledo or Detroit	22.60	22.60	22.10	23.10
Newark, N. J., from Birmingham	21.61	.....	.....	.....
Newark, N. J., from Bethlehem	21.99	22.49	.....	.....
Philadelphia from Birmingham	20.93	.....	20.81	.....
Philadelphia from Swedeland, Pa.	21.31	21.81	20.81	.....
Pittsburgh district from Neville Island	Neville base plus $1.21 switching charges		67c, 81c and	
Saginaw, Mich., from Detroit	21.75	21.75	21.25	21.25

Delivered from Basing Points:	No. 2 Fdry	Malleable	Basic	Bessemer
St. Louis, northern	20.00	20.00	19.50	.....
St. Louis from Birmingham	†19.62	.....	19.50	.....
St. Paul from Duluth	21.94	21.94	.....	22.44

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $24.00, Phila. base, standard and copper bearing, $25.13.

Gray Forge		Charcoal	
Valley furnace	19.00	Lake Superior fur.	$22.00
Pitts. dist. fur.	19.00	Do., del. Chicago	26.26
		Lyles, Tenn.	23.50

Silvery†

Jackson county, O., base; 6-6.50 per cent $22.75; 6.51-7—$23.25; 7-7.50—$23.75; 7.51-8—$24.25; 8-8.50—$24.75; 8.51-9—$25.25; 9-9.50—$25.75. Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon. 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$55.00

First Quality

Pa., Ill., Md., Mo., Ky.	$45.00
Alabama, Ga.,	$38.00-45.00

Second Quality

Pa., Ill., Ky., Md., Mo.	40.00
Ga., Ala.	35.00

Ohio

First quality	$40.00
Intermediary	37.00
Second quality	28.00

Malleable Bung Brick

All bases	50.00

Silica Brick

Pennsylvania	$45.00
Joliet, E. Chicago	54.00
Birmingham, Ala.	48.00

Magnesite

Imported dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead-burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	40.00
Domestic dead-burned gr. net ton f.o.b. Chewelah, Wash. (bulk)	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$45.00
Chemically bonded chrome brick	45.00
Magnesite brick	65.00
Chemically bonded magnesite brick	55.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$20.00
*Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all-rail	$17.50
Do., for barge	$17.50

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82% tidewater, duty paid	75.00
Do., Balti. base	75.00
Do., del. Pittsb'gh	80.13
Spiegeleisen, 19-20% dom. Palmerton, Pa., spot†	26.00
Do., New Orleans	26.00
Ferrosilicon, 50% freight all., cl.	77.50
Do., less carload	85.00
Do., 75 per cent	126-130.00
Spot, $5 a ton higher.	
Silicoman., 2½ carb.	85.00
2% carbon, 90.00; 1%,	100.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.00
Ferrotungsten, stand., lb. con. del.	1.35- 1.45
Ferrovanadium, 35 to 40% lb., cont.	2.70- 2.90
Ferrotitanium, c. l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt. allow., lb.	7.00
Do., under 1 ton	7.50
Ferrophosphorus, per ton, c. l., 17-19% Rockdale, Tenn., basis, 18%, $3 unitage	58.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Anniston, Ala., 24% $3 unitage	75.00
Ferromolybdenum, stand. 55-65%, lb.	0.95
Molybdate, lb. cont.	0.80

†Carloads, Quan. diff. apply.

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Chinese Spot, N. Y.	Nickel Cathodes
Feb. 1	9.25	9.37½	8.85	48.37½	45.87½	4.50	4.35	4.85	*19.00	12.75	35.00
Feb. 3	9.25	9.37½	8.85	48.12½	46.05	4.50	4.35	4.85	*19.00	12.87½	35.00
Feb. 4	9.25	9.37½	8.85	48.00	45.85	4.50	4.35	4.85	*19.00	12.87½	35.00
Feb. 5	9.25	9.37½	8.85	47.85	45.80	4.50	4.35	4.85	*19.00	12.87½	35.00
Feb. 6	9.25	9.37½	8.85	47.70	45.55	4.50	4.35	4.85	*19.00	12.87½	35.00
Feb. 7	9.25	9.37½	8.85	47.62½	45.55	4.50	4.35	4.85	*19.00	12.87½	35.00

*Nominal range 19.00 to 21.00c.

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 9.00c Conn. copper.

Sheets	
Yellow brass (high)	14.62½
Copper hot rolled	16.50
Lead cut to jobbers	8.25
Zinc, 100-lb. base	9.50
Tubes	
High yellow brass	16.87½
Seamless copper	17.00
Rods	
High yellow brass	13.12½
Copper, hot rolled	13.50
Anodes	
Copper untrimmed	14.00
Wire	
Yellow brass (high)	15.12½

OLD METALS

Deal. buying prices, cents lb.

No. 1 Composition Red Brass	
New York	5.75- 6.00
*Cleveland	6.50- 6.75
Chicago	6.00- 6.25
*St. Louis	5.50- 6.00
Heavy Copper and Wire	
New York, No. 1	7.00- 7.25
Chicago, No. 1	7.00- 7.50
Cleveland	6.75- 7.00
St. Louis, No. 1	7.00- 7.37½
Composition Brass Borings	
New York	5.00- 5.25
Light Copper	
New York	5.75- 6.00
Chicago	5.50- 6.00
*Cleveland	6.00- 6.25
St. Louis	5.75- 6.00
Light Brass	
Chicago	3.50- 3.75
Cleveland	3.25- 3.50
St. Louis	3.50- 3.75
Lead	
New York	3.50- 3.75
Cleveland	3.50- 3.75
Chicago	3.37½-3.62½
*St. Louis	3.25- 3.75
Zinc	
New York	2.00- 2.25
Cleveland	2.50- 2.75
St. Louis	2.75-3.00
Aluminum	
Borings, Cleveland	9.00- 9.50
Mixed, cast, Cleve.	13.00-13.25
Mixed, cast, St. L.	12.50-12.75
Clips, soft, Cleve.	15.00-15.25

SECONDARY METALS

Brass ingot, 85-5-5-5	9.50
Stand. No. 12 alum.	17.00-17.50

Iron and Steel Scrap Prices

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	9.50-10.50
Boston, dock, expt.	10.25
Boston, domestic	8.75
Buffalo, No. 1	12.50-13.00
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	13.50-14.00
Cleveland, No. 1	13.50-14.00
Cleveland, No. 2	12.50-13.00
Detroit, No. 1	10.00-10.50
Detroit, No. 2	9.50-10.00
Eastern Pa., No. 1	12.50-13.00
Eastern Pa., No. 2	11.50-12.00
Federal, Ill.	10.75-11.25
Granite City, R. R.	11.75-12.25
Granite City, No. 2	10.00-10.50
N. Y., deal. No. 2	7.75- 8.00
N. Y., deal. barge (No. 1 for export)	9.25- 9.50
Pitts., No. 1 (R. R.)	15.00-15.50
Pitts., No. 1 (dlr.)	14.50-15.00
Pittsburgh, No. 2	13.50-14.00
St. Louis	10.00-10.50
Toronto, dealers	7.50
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	12.00-12.50
Chicago, dealer	11.50-12.00
Cleveland	13.25-13.75
Detroit	11.00-11.50
E. Pa., new mat	12.25-12.50
Pittsburgh	14.50-15.00
St. Louis	9.00- 9.50
Valleys	13.25-13.75

BUNDLED SHEETS

Buffalo	10.00-10.50
Cincinnati, del.	8.00- 8.50
Cleveland	10.00-10.50
Pittsburgh	13.50-14.00
St. Louis	6.50- 7.00
Toronto, dealers	4.50

SHEET CLIPPINGS, LOOSE

Chicago	10.00-10.50
Cincinnati	7.50- 8.00
Detroit	8.25- 8.75
St. Louis	6.00- 6.50

STEEL RAILS, SHORT

Birmingham	12.50-13.00
Buffalo	15.25-15.75
Chicago (3 ft.)	15.00-15.50
Chicago (2 ft.)	16.00-16.50
Cincinnati, del.	14.00-14.50
Detroit	13.50-14.00
Pitts., open-hearth, 3 ft. and less	15.25-15.75
St. Louis, 2 ft. & less	14.00-14.50

STEEL RAILS, SCRAP

Boston	8.00- 8.25
Chicago	14.00-14.50
Pittsburgh	14.50-15.00
St. Louis	12.00-12.50
Buffalo	12.25-12.75
Toronto, dealers	8.50

STOVE PLATE

Birmingham	7.00- 7.50
Boston, dealers	4.75- 5.25
Buffalo	10.50-11.00
Chicago	7.50- 8.00
Cincinnati, dealers	7.50- 8.00
Detroit, net	8.00- 8.50
Eastern Pa.	10.00-10.50
N. Y., deal. fdry.	6.50- 7.00
St. Louis	7.50- 8.00
Toronto, dealers, net	5.50

COUPLERS, SPRINGS

Buffalo	14.50-15.00
Chicago, springs	15.00-15.50
Eastern Pa.	16.00-16.50
Pittsburgh	17.00-17.50
St. Louis	12.25-12.50

ANGLE BARS—STEEL

Chicago	14.50-15.00
St. Louis	13.00-13.50
Buffalo	14.50-15.00

RAILROAD SPECIALTIES

Chicago	15.00-15.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	14.50-15.00
Cleveland, billet, bloom crops	16.50-17.00
Eastern Pa., crops	16.50
Pittsburgh, billet, bloom crops	17.25-17.75
Pittsburgh, sheet bar crops	16.75-17.25

FROGS, SWITCHES

Chicago	13.50-14.00
St. Louis, cut	12.00-12.50

SHOVELING STEEL

Chicago	13.50-14.00
Federal, Ill.	10.75-11.25
Granite City, Ill.	10.00-10.50
Toronto, dealers	6.50

RAILROAD WROUGHT

Birmingham	7.50- 8.00
Boston, dealers	6.00- 6.50
Buffalo, No. 1	11.00-11.50
Buffalo, No. 2	12.50-13.00
Chicago, No. 1, net	12.50-13.00
Chicago, No. 2	13.50-14.00
Cincinnati, No. 2	11.00-11.50
Eastern Pa.	13.00
N. Y., No. 1 deal.	9.50-10.00
St. Louis, No. 1	10.00-10.50
St. Louis, No. 2	11.75-12.25
Toronto, No. 1, dlr.	7.00

SPECIFICATION PIPE

Eastern Pa.	11.50
New York, dealers	6.75- 7.25

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	12.00-12.50
Cinci., No. 1, deal.	8.00- 8.50
Cincinnati, No. 2	5.00- 5.50
Cleveland, No. 2	8.75- 9.00
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	13.75-14.25
Toronto, dealers	6.00

MACHINE TURNINGS

Birmingham	6.00- 7.00
Boston, dealers	3.75- 3.90
Buffalo	5.75- 6.25
Chicago	6.50- 7.00
Cincinnati, dealers	6.00- 6.50
Cleveland	8.25- 8.50
Detroit	6.00- 6.50
Eastern Pa.	8.00- 8.50
New York, dealers	4.00- 4.50
Pittsburgh	10.25-10.75
St. Louis	4.50- 5.00
Toronto, dealers	4.00
Valleys	10.00-10.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	2.50- 2.75
Buffalo	7.75- 8.25
Cincinnati, dealers	5.50- 6.00
Cleveland	8.75- 9.00
Detroit	6.00- 6.50
Eastern Pa.	6.50
New York, dealers	3.25- 3.75
Pittsburgh	9.00- 9.50
Toronto, dealers	4.00

CAST IRON BORINGS

Birmingham, plain	5.00- 6.00
Boston, chemical	5.50- 6.50
Boston, dealers	3.25- 3.50
Buffalo	7.75- 8.25
Chicago	6.50- 7.00
Cincinnati, dealers	5.50- 6.00
Cleveland	8.75- 9.00
Detroit	6.00- 6.50
E. Pa., chemical	10.00-12.00
New York, dealers	3.50- 4.00
St. Louis	4.50- 5.00
Toronto, dealers	5.00

PIPE AND FLUES

Cincinnati, dealers	7.50- 8.00

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	7.75- 8.25
Cincinnati	6.00- 6.50
Eastern Pa.	9.50-10.00
New York, dealers	6.00- 6.50
St. Louis	7.50- 8.00

FORGE FLASHINGS

Boston, dealers	6.75- 7.00
Buffalo	11.00-11.50
Cleveland	11.50-12.00
Detroit	10.00-10.50
Pittsburgh	13.50-14.00

FORGE SCRAP

Boston, dealers	4.50- 5.00
Chicago, heavy	15.00-15.50
Eastern Pa.	12.00-12.50

ARCH BARS, TRANSOMS

St. Louis	12.50-13.00

AXLE TURNINGS

Boston, dealers	3.75- 4.25
Buffalo	10.50-11.00
Chicago, elec. fur.	13.25-13.75
Eastern Pa.	11.50
St. Louis	9.00- 9.50
Toronto	4.50

STEEL CAR AXLES

Birmingham	12.00-12.50
Boston, ship. point	11.00-11.25
Buffalo	15.00-15.50
Chicago, net	15.00-15.50
Eastern Pa.	17.00
St. Louis	13.50-14.00
Toronto	8.50

SHAFTING

Boston, ship. point	13.25-13.50
Eastern Pa.	18.50
New York, dealers	13.50-14.00
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	10.00-11.00
Boston, iron deal.	7.75- 8.00
Buffalo, iron	12.00-12.50
Buffalo, steel	15.00-15.50
Chicago, iron	13.50-14.00
Chicago, rolled steel	15.00-15.50
Cincinnati, iron	11.00-11.50
Eastern Pa., iron	14.50-15.00
Eastern Pa., steel	16.00-16.50
Pittsburgh, iron	14.25-14.75
Pittsburgh, steel	17.00-17.50
St. Louis, iron	11.00-11.50
St. Louis, steel	12.25-12.75
Toronto, net	8.50

NO. 1 CAST SCRAP

Birmingham	11.00-12.00
Boston, No. 1 mach.	9.00- 9.25
Boston, No. 2	8.50- 8.75
Boston, tex. con.	8.50- 9.00
Buffalo, cupola	12.00-12.50
Buffalo, mach.	13.00-13.50
Chicago, agri. net	10.50-11.00
Chicago, auto	11.50-12.00
Chicago, mach. net	12.50-13.00
Chicago, railr'd net	11.25-11.75
Cinci., mach. cup	10.50-11.00
Cleveland, mach.	14.50-15.00
Detroit, auto, net	12.00-12.50
Eastern Pa., cupola	13.00-13.50
E. Pa., mixed yard	11.50-12.00
Pittsburgh, cupola	13.50-14.00
San Francisco, del.	13.50-14.00
Seattle	7.50- 9.00
St. Louis, No. 1	11.25-11.75
St. L., No. 1 mach.	12.50-13.00
Toronto, No. 1, mach., net	9.00

HEAVY CAST

Boston, del.	6.75- 7.00
Buffalo, break.	10.50-11.00
Cleveland, break.	11.50-12.00
Detroit, No. 1 mach. net	12.00-12.50
Detroit, break.	9.50-10.00
Detroit, auto net	11.50-12.00
Eastern Pa.	12.50-13.00
N. Y., break. deal.	8.25- 8.50
Pittsburgh	12.50-13.00

MALLEABLE

Birmingham, R. R.	11.50-12.50
Boston, consum.	13.50-14.50
Buffalo	15.25-15.75
Chicago, R. R.	16.50-17.00
Cincinnati, agri. del.	12.50-13.00
Cleveland, rail	16.50-17.00
Detroit, auto, net	13.50-14.00
Eastern Pa., R. R.	16.00-16.50
Pittsburgh, rail	17.00-17.50
St. Louis, R. R.	13.75-14.25
Toronto, net	7.00

RAILS FOR ROLLING

5 feet and over

Birmingham	11.50-12.00
Boston, dealers	8.00- 8.50
Buffalo	12.50-13.00
Chicago	15.00-15.50
Eastern Pa.	13.00-14.00
New York, dealer	9.75-10.25
St. Louis	13.50-14.00

LOCOMOTIVE TIRES

Chicago (cut)	15.50-16.00
St. Louis, No. 1	12.00-12.50

LOW PHOS. PUNCHINGS

Buffalo	14.50-15.00
Chicago	15.50-16.00
Eastern Pa.	16.00-16.50
Pittsburgh (heavy)	16.75-17.25
Pittsburgh (light)	16.00-16.50

Iron Ore

Lake Superior Ore

Gross ton, 51½% Lower Lake Ports

Old range bessemer	$4.80
Mesabi nonbess.	4.50
High phosphorus	4.40
Mesabi bessemer	4.65
Old range nonbess.	4.65

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56-63% con. (nom.)	8.00- 9.00
Cop.-free low phos. 58-60% (nom.)	10.00-10.50

Foreign Ore

Cents per unit, f.a.s. Atlantic ports (nominal)

Foreign manganiferous ore, 45.55% iron, 6-10% man.	10.50
No. Afr. low phos.	10.50
Swedish basic, 65%	9.50
Swedish low phos.	10.50
Spanish No. Africa basic, 50 to 60%	10.50
Tungsten, spot sh. ton unit, duty pd.	$15.85-16.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	19.25

Manganese Ore

(Nominal)

Prices not including duty, cents per unit cargo lots

Caucasian, 52-55%	26.00
So. African, 52%	26.50
So. Afr., 49-51%	25.50
Indian, 58-60%	nominal
Indian, 48-50%	nominal

Warehouse Iron and Steel Prices

Cents per pound for delivery within metropolitan districts of cities specified

STEEL BARS

Baltimore*	3.00c
Boston††	3.10c
Buffalo	3.00c
Chattanooga	3.36c
Chicago (j)	3.00c
Cincinnati	3.22c
Cleveland	3.00c
Detroit	3.09c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.11c-3.26c
New Orleans	3.35c
New York‡ (d)	3.31c
Pitts. (h)	2.95c-3.10c
Philadelphia*	3.03c
Portland	3.50c
San Francisco	3.25c
Seattle	3.70c
St. Louis	3.25c
St. Paul	3.25c-3.40c
Tulsa	3.25c

IRON BARS

Portland	3.40c
Chattanooga	3.36c
Baltimore*	3.05c
Chicago	2.75c
Cincinnati	3.22c
New York‡(d)	3.36c
Philadelphia*	2.93c
St. Louis	3.25c
Tulsa	3.25c

REINFORCING BARS

Buffalo	2.60c
Chattanooga	3.36c
Chicago	2.10c-2.60c
Cleveland (c)	2.10c
Cincinnati	3.25c
Houston	3.25c
Los Ang., cl.	2.45c
New Orleans	3.50c
Pitts., plain (h)	3.05c
Pitts., twisted squares (h)	3.175c
San Francisco	2.45c
Seattle	2.45c
St. Louis	3.25c
Tulsa	3.25c
Young.	2.30c-2.60c

SHAPES

Baltimore*	3.00c
Boston††	3.19c
Buffalo	3.25c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland	3.31c
Detroit	3.42c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.37c
Philadelphia*	2.98c
Pittsburgh (h)	3.15c
Portland (i)	3.50c
San Francisco	3.25c
Seattle (i)	3.70c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

PLATES

Baltimore*	3.00c
Boston††	3.21c
Buffalo	3.37c
Chattanooga	3.56c
Chicago	3.20c
Cincinnati	3.42c
Cleveland, ¼-in. and over	3.31c
Detroit	3.42c
Detroit, ⅜-in.	3.65c
Houston	3.00c
Los Angeles	3.60c
Milwaukee	3.31c
New Orleans	3.55c
New York‡(d)	3.40c
Philadelphia*	2.98c
Phila. floor	4.95c
Pittsburgh(h)	3.15c
Portland	3.35c
San Francisco	3.25c
Seattle	3.55c
St. Louis	3.45c
St. Paul	3.45c
Tulsa	3.50c

NO. 10 BLUE

Baltimore*	3.10c
Boston††	3.30c
Buffalo	3.62c
Chattanooga	3.36c
Chicago	3.05c
Cincinnati	3.22c
Cleveland	3.11c
Det., 8-10 ga.	3.14c
Houston	3.35c
Los Angeles	3.75c
Milwaukee	3.16c
New Orleans	3.55c
New York‡(d)	3.31c
Portland	3.75c
Philadelphia*	3.08c
Pittsburgh(h)	2.95c
San Fracisco	3.35c
Seattle	3.70c
St. Louis	3.45c
St. Paul	3.30c
Tulsa	3.70c

NO. 24 BLACK

Baltimore*†	3.60c
Boston (g)	3.95c
Buffalo	3.25c
Chattanooga	4.16c
Chicago	3.85c
Cincinnati	4.02c
Cleveland	3.91c
Detroit	3.94c
Los Angeles	4.35c
Milwaukee	3.96c
New Orleans	4.50c
New York‡(d)	3.89c
Philadelphia*†	3.60c
Pitts.** (h)	3.55c
Portland	4.40c
San Francisco	4.00c
Seattle	4.40c
St. Louis	4.10c
St. Paul	3.90c
Tulsa	4.75c

NO. 24 GALV. SHEETS

Baltimore*†	4.30c
Buffalo	4.00c
Boston (g)	4.65c
Chattanooga	4.86c
Chicago (h)	4.55c
Cincinnati	4.72c
Cleveland	4.61c
Detroit	4.72c
Houston	4.40c
Los Angeles	4.95c
Milwaukee	4.66c
New Orleans	4.95c
New York‡(d)	4.30c
Philadelphia*†	4.40c
Pitts.**(h)	4.15-4.45c
Portland	5.00c
San Francisco	4.50c
Seattle	5.00c
St. Louis	4.65c
St. Paul	4.50c
Tulsa	5.10c

BANDS

Baltimore*	3.20c
Boston††	3.30c
Buffalo	3.42c
Chattanooga	3.61c
Chicago	3.30c
Cincinnati	3.47c
Cleveland	3.36c
Detroit, ⅜-in. and lighter	3.39c
Houston	3.25c
Los Angeles	4.10c
Milwaukee	3.41c
New Orleans	3.95c
New York‡(d)	3.56c
Philadelphia	3.18c
Pittsburgh (h)	3.20c
Portland	4.25c
San Francisco	4.10c
Seattle	4.25c
St. Louis	3.55c
St. Paul	3.55c
Tulsa	3.45c

HOOPS

Baltimore	2.30c
Boston††	4.50c
Buffalo	3.42c
Chicago	3.30c
Cincinnati	3.47c
Det., No. 14 and lighter	3.39c
Los Angeles	5.85c
Milwaukee	3.41c
New York‡(d)	3.56c
Philadelphia	3.43c
Pittsburgh (h)	3.70c
Portland	5.60c
San Francisco	6.15c
Seattle	5.60c
St. Louis	3.55c
St. Paul	3.55c

COLD FIN. STEEL

Baltimore (c)	3.73c
Boston	3.90c
Buffalo (h)	3.55c
Chattanooga*	4.13c
Chicago (h)	3.50c
Cincinnati	3.72c
Cleveland (h)	3.50c
Detroit	3.79c
Los Ang. (f) (d)	5.85c
Milwaukee	3.61c
New Orleans	4.30c
New York‡(d)	3.81c
Philadelphia	3.76c
Pittsburgh	3.50c
Portland (f) (d)	6.15c
San Fran.(f) (d)	5.95c
Seattle (f) (d)	6.15c
St. Louis	3.75c
St. Paul	4.02c
Tulsa	4.65c

COLD ROLLED STRIP

Boston, 0.100-in., 500 lb. lots	3.245c
Buffalo	3.39c
Chicago	3.27c
Cincinnati (b)	3.22c
Cleveland (b)	3.20c
Detroit	3.33c
New York‡(d)	3.36c
St. Louis	3.45c

TOOL STEELS

(Applying on or east of Mississippi river; west of Mississippi 1c up)

	Base
High speed	57c
High carbon, high chrome	37c
Oil hardening	22c
Special tool	20c
Extra tool	17c
Regular tool	14c

Uniform extras apply.

BOLTS AND NUTS

(100 pounds or over)

	Discount
Chicago (a)	70
Cleveland	70
Detroit	70-10
Milwaukee	70
Pittsburgh	70

(a) Under 100 pounds, 65 off.

(b) Plus straightening, cutting and quantity differentials; (c) Plus mill, size and quantity extras; (d) Quantity base; (e) New mill classif. (f) Rounds only; (g) 50 bundles or over; (h) Outside delivery, 10c less; (i) Under 3 in.; (j) shapes other than rounds, flats, fillet angles, 3.15c.

‡Domestic steel; *Plus quan. extras; **Under 25 bundles; *†50 or more bundles; † New extras apply; ††Base 40,000 lbs., extras on less.

Prices on heavier lines are subject to new quantity differentials; 399 lbs. and less, up 50 cts.; 400 to 9999 lbs., base; 10,000 to 19,999 lbs., 15 cts. under; 20,000 to 39,999 lbs., 25 cts. under; 40,000 lbs. and over, 35 cts. under base.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Feb. 6

Export Prices f. o. b. Ship at Port of Dispatch—(By Cable or Radio)

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
PIG IRON			
Foundry, 2.50-3.00 Silicon	$15.60 3 2 6	$13.39	1 13 0
Basic bessemer	15.60 3 2 6*	12.33	1 10 0
Hematite, Phos. .03-.05	16.25 3 5 0	.....	.....
SEMIFINISHED STEEL			
Billets	$27.50 5 10 0	$19.02	2 7 0
Wire rods, No. 5 gage	42.50 8 10 0	36.44	4 10 0
FINISHED STEEL			
Standard rails	$41.25 8 5 0	$44.53	5 10 0
Merchant bars	1.67c 7 10 0	1.15c to 1.20c	3 2 6 to 3 5 0
Structural shapes	1.67c 7 10 0	1.14c	3 1 6
Plates, †¾ in. or 5 mm.	1.79c 8 1 3	1.56c	4 5 0
Sheets, black, 24 gage or 0.5 mm.	2.17c 9 15 0	2.13c	5 16 0††
Sheets, gal., 24 gage, corr.	2.62c 11 15 0	2.28c	6 5 0
Bands and strips	1.89c 8 10 0	1.46c	4 0 0
Plain wire, base	2.06c 9 5 0	1.76c	5 5 0
Galvanized wire, base	2.39c 10 15 0	2.15c	5 17 6
Wire nails, base	2.67c 12 0 0	1.75c	4 15 0
Tin plate, box 108 lbs.	$ 4.69 0 18 9	.....	.....

British ferromanganese $75 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d $(43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$17.50 3 10 0(a)	$17.13	260	$13.15	385	$25.71 63
Basic bessemer pig iron	17.50 3 10 0(a)	12.52	190	11.96	350	28.31 (b) 69.50
Furnace coke	4.87 0 19 6	6.26	95	4.10	122	7.75 19
Billets	27.50 5 10 0	28.34	430	18.65	540	39.38 96.50
Standard rails	2.21c 8 5 0	2.00c	671	1.70c	1,100	2.63c 132
Merchant bars	2.31c 8 12 0	1.68c	560	.92c	600	2.19c 110
Structural shapes	2.34c 8 15 0	1.65c	550	.92c	600	1.97c 107
Plates, †¾-in. or 5 mm.	2.43c 9 1 3	2.10c	700	1.07c	700	2.32c 127
Sheets, black	3.09c 11 10 0§	1.80c	600‡	1.26c	825‡	2.67c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm.	3.62c 13 10 0	2.85c	950	2.30c	1,500	6.78c 370
Plain wire	2.49c 9 5 0	2.64c	900	1.77c	1,150	3.17c 173
Bands and strips	2.52c 9 7 0	1.95c	650	2.71c	800	2.32c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. a del. Middlesbrough. b hematite. ††Close annealed.

**Gold pound sterling carries a premium of 66.25 per cent over paper sterling.

Bars

Bar Prices, Page 64

Pittsburgh—Carbon steel bar specifications from the automobile industry have declined relatively less than strip or sheets. Furthermore, bar prices have not been under the pressure that flat-rolled products have experienced, and 1.85c, Pittsburgh, on bars is relatively firmer than quotations on sheets or strip. Apparently this is due to the more exacting bar specifications for size, quality and finish. Principal bar buyers at present include shipbuilders in the east, mid-western bolt and nut manufacturers, and railroad car shops. In the alloy bar market, the 2.45c base price is officially unchanged, with application now in effect on small-lot quantity extras.

Chicago—While demand from the farm implement industry and from miscellaneous bar consumers is fairly heavy, lighter requirements of the automotive industry retard the upward movement in total specifications. A continuation of restricted automotive demand is expected for the remainder of this month. Operations of some farm implement manufacturers are increasing under the stimulus of active call from dealers.

Cleveland—Forge shops on automobile work are beginning to order again, in moderate size lots. Manufacturers of trucks, tractors and agricultural implements continue to take substantial tonnages. Machine tool builders are fairly active. Prices are steady.

New York—Sellers of commercial steel bars had a fairly satisfactory month in January and report specifications being maintained this month. Bolt and nut manufacturers, railroads and local shipyards contribute most of the current volume. Prices are unsteady.

Boston—Steel bar consumption is good in this district. Specifications to the mills are lagging, however, because of the big stocks that were laid in when consumers were expecting a price advance that did not materialize. Some of the leading forge shops and tool plants are enjoying their business, stepping up demand for forging quality bars. The market is firm at 1.85c, base Pittsburgh, equivalent to 2.27c delivered Boston.

Philadelphia—Commercial steel bar prices are steady at 1.85c, Pittsburgh, or 2.16c, Philadelphia, with specifications sustained at a moderate rate.

Industrial Collieries Co. is the new name of the coal mining company subsidiary of Bethlehem Steel Corp. at all its coal properties formerly operated by Bethlehem Mines Corp. Mines in western Pennsylvania and West Virginia have complied with the change.

Plates

Plate Prices, Page 64

Pittsburgh—A. M. Byers Co., Pittsburgh, has issued a new extra card on wrought iron plates, dated as of Jan. 1, 1936. Principal changes from the previous wrought iron plate card are extras for specified dimensional and workmanship tolerances closer than manufacturers' standards where extras of 15 cents are now in effect for thickness, universal mill plate widths, cutting to dimension camber, and flatness.

Other changes involved in the new list are extras for pickling or sandblasting, where a 25-cent extra is involved for plates over 6 inches to 24 inches wide, exclusive, and $\frac{5}{8}$-inch or under in thickness. Extra of 15 cents is charged for plates 24 to 84 inches wide, inclusive, and $\frac{5}{8}$-inch and under thickness but not including oiling, and an extra of 15 cents is charged for pickling and sandblasting by the purchaser where the plates are subject to surface inspection and rejection after pickling or sandblasting by the purchaser. An extra for oiling of plates in all sizes, 24 inches wide or over, of 10 cents is also listed on the new card.

Chicago—Plate shipments to railroads are increasing moderately. Freight car builders, however, have little business on books despite fair prospects for equipment buying. Tank building is relatively quiet, orders being slow for municipal work, and industrial tank fabrication is only moderately active.

Cleveland—Plate orders during the week were restricted to less than carload lots. Railroads purchased some material for repairs, but tank and boiler work appears to be at a low ebb.

Boston—Plate demand is lively and is featured by a large number of small orders which make a substantial total. Considerable potential business is indicated by current inquiries. Most of these are small but at least four of them involve lots ranging from 400 to 1000 tons. The market is firm at 1.90c, base, Coatesville, equivalent to 2.22c delivered, Boston.

New York—Pending minor revisions in specifications plate makers are awaiting distribution of 15,000 tons of hull steel for the United States liner to be built at Newport News. The Lackawanna has awarded steel for repairs to 250 box and coal cars. Steel pipe fabricators here will submit new bids Feb. 21 on 8300 tons of large diameter pipe for St. Louis and have figures in on 1850 tons of 48 to 61-inch steel water pipe for installation in the Bronx and about 14,000 feet of 36 to 48-inch steel water pipe for Washington. Miscellaneous steel requirements are pending for a zinc refinery for the American Smelting & Refining Co. at Amarillo, Tex.

Philadelphia—Plate mill operations are relatively steady, although much is still to be desired. Ship tonnage continues to hold the most promise. Sun Shipbuilding Co., Chester, Pa., it is said, has yet to place formal contracts on more than 20,000 tons for ship work already booked, and is low, apparently, on the construction of either one or two cargo passenger boats for the American-South African Steamship Line Inc., New York. Incidentally, there was only one other bidder for this work, Federal Shipbuilding Co., Kearny, N. J. Pending full analysis of the bids, it appears that award will not be made for at least another few weeks.

Platemakers look to the Lehigh Valley for the next substantial railroad tonnage. Atlantic Refining Co., Philadelphia, is expected to figure direct on plates for outside storage tanks and pipe for its development at Atreco, Tex. However, all the fabricated work for the refinery proper at that point will be placed by the M. W. Kellogg Co., Jersey City, N. J. This will require approximately 2000 tons. Plate prices are being generally quoted at 1.90c, Coatesville, Pa., or 1.99½c, Philadelphia.

Approximately 600 tons of plates will be required for 15 locomotives booked by the Baldwin Locomotive Works, Eddystone, Pa., for the Bessemer & Lake Erie and Union, United States Steel Corp. subsidiaries.

Sun Shipbuilding & Dry Dock Co., Chester, Pa., has booked a tanker for Sun Oil Co., requiring about 5000 tons of hull steel.

San Francisco—Plate bookings this year are already within 12,000 tons of the total placed during 1935, when only 52,105 tons were awarded. Consolidated Steel Corp. secured 3055 tons for the El Capitan, San Diego and the La Mesa, Lemon Grove and Spring Valley irrigation district pipe lines, 36 to 48-inch welded steel pipe. Western Pipe & Steel Co. took 500 tons for 20 and 24-inch welded steel pipe for San Francisco and Southwest Welding & Manufacturing Co. booked 500 tons for a 30-inch welded steel line for Arcadia, Calif. Interest now centers around the outcome of the award of 4400 tons for a 60-inch welded steel pipe line for

San Francisco, bids on which were just opened.

Contracts Placed

3055 tons, 36 to 48-inch welded steel pipe, El Capitan and La Mesa pipe line, San Diego, Calif.; to Consolidated Steel Corp., Los Angeles.

1400 tons, ten standard all-welded coal barges for Pittsburgh Coal Co., Pittsburgh, to Treadwell Construction Co., Midland, Pa.

800 tons, four steel covered cargo barges for the Union Barge Lines, to Dravo Contracting Co., Pittsburgh. Each barge 132 x 35 x 11 feet.

500 tons, 20 and 24-inch welded steel pipe, contract 101, San Francisco, to Western Pipe & Steel Co., San Francisco.

500 tons, 30-inch welded steel pipe, Arcadia, Calif., to Southwest Welding & Mfg. Co., Los Angeles.

260 tons, one 200 x 25 x 7.2-foot towboat for Campbell Transportation Co., to Dravo Contracting Co., Pittsburgh; contract additional to a similar towboat now under construction by Dravo Contracting Co. for the same buyer.

150 tons, one 130 x 34 x 12½-foot steel coal barge, for Pennsylvania railroad, to Dravo Contracting Co., Neville Island, Pittsburgh, to be fabricated in Neville Island shops and shipped to Wilmington, Del., yards for assembly.

140 tons, tanks, Milliken, W. Va., for Eureka Pipe Line Co., to Pittsburgh-Des Moines Steel Co., Neville Island, Pittsburgh.

100 tons, tank work, Champion, Pa., for Pittsburgh Coal Co., to Hammond Iron Works, Warren, Pa., and Pittsburgh-Des Moines Steel Co., Pittsburgh.

Contracts Pending

160 tons, two tanks, Alhambra, Calif.; bids opened.

Sheets

Sheet Prices, Page 64

Pittsburgh — In the first week of February sheet buying was slightly less than in the last week of January but equal to the January average. Automobile buyers, in cutting down supplies, are buying cautiously. Steel locker, stove and agricultural implement participation in the market is without a definable trend. In stainless and electrical sheets, demand continues steady at a relatively high rate. Sheet prices are fairly firm on a Pittsburgh basis, the only weakness being in the Detroit-delivered prices on both hot and cold-rolled sheets. Undergoing a 5-point decline on the average, sheet mill operations on common black, full finished and galvanized grades last week averaged 55 per cent of capacity, with jobbing mills still failing to improve, at about 40 per cent.

Cleveland — A moderate revival in demand from automobile manufacturers and partsmakers is under way. Shipments which were suspended late in January are being released, and additional specifications are being received. Sheetmakers believe this to be the forerunner of a progressive improvement, with considerable buying necessary for early spring automobile production schedules. Orders from refrigerator manufacturers have increased sharply. Partsmakers in this district still are receiving the same $3 a ton concession as prevails in the Detroit district, on automobile material. While barrelmakers in eastern districts are reported to have received liberal concessions recently, coincident with a reduction in the price of barrels, prices here on barrel stock are said to be firm.

Chicago — Sheet mills continue busy despite the lag in automotive demand. Specifications from other consumers are equal to or in excess of the rate a month ago, with demand still well diversified. Consumers generally are ordering for relatively early needs. Prices remain fairly steady.

New York—Miscellaneous sheet demand is well sustained, although inclement weather has retarded demands for building construction purposes. A heavy tonnage of sheets from continuous mills will be required for sashes for warehouse and cold storage buildings for the proposed terminal at Staten Island. Sheet deliveries are easier.

Philadelphia — Sheet business continues spotty, with shipping schedules easier. Black and blue annealed grades are available at two to three weeks, in several cases, and galvanized sheets at two to four weeks, depending somewhat upon the gage specified; cold-rolled sheets are now offered for shipment in four to five weeks. While the price situation is being closely watched by consumers, the market as a whole appears fairly steady. This is particularly true of base prices, although deviations with respect to extras are noted from time to time. The Wheeling Steel Corp., Wheeling, W. Va., as a case in point, has been awarded 250 tons of license tag stocks by the state of Pennsylvania, this company's price being low, apparently, as a result of a deviation in quoting the width extras. The marine corps, Philadelphia, opened bids Feb. 5 on 60 to 70 tons of galvanized sheets for miscellaneous requirements and 120 tons of sheets for locker construction, and on at least the locker tonnage all prices were reported to be the same.

St. Louis—Cold weather has been a detriment, as it has halted building operations and slowed down activities in other quarters. Labor troubles at local stove plants also have worked adversely.

Cincinnati—Demand for sheets has improved, with buyers demanding prompt shipment. Nature of the recent purchasing has not been conducive to backlogs, and rolling schedules are close to 80 per cent to meet current shipping requirements. Specifications of automobile manufacturers have again turned upward, and refrigerator manufacturers are taking more material for stocking of dealers with new models. Other miscellaneous demand has been maintained with sole exception of that for galvanized.

Birmingham, Ala.—Sheet mills are maintaining a fairly steady production, with shipments almost equal to output. Numerous small orders make up a substantial tonnage. Demand from agricultural sections is expected to revive shortly.

Pipe

Pipe Prices, Page 65

Pittsburgh—Plans to build a 300-mile, 20 or 22-inch steel pipe line from a mid-Indiana point to supply natural gas to Detroit appear to be further delayed. The line, taking about 60,000 tons, was under the sponsorship of the Panhandle Eastern Pipe Line Co. Recent litigation in federal court at Wilmington has ordered Columbia Gas & Electric Co. and Columbia Oil & Gasoline Corp. to relinquish control of the Panhandle company, which in turn makes it impossible for the former companies to assist in financing the line. Discounts on pipe products are unchanged, with the exception of the recent 5-point extra given jobbers on small sizes of butt weld pipe under 3-inch diameter.

Chicago—Cicero, Ill., again has rejected bids on 7000 tons of cast pipe. Orders and inquiries elsewhere are restricted, though a large tonnage remains pending. Weather is handicapping work in northern states, though WPA projects are being continued. Most orders lately have consisted of small lots for WPA projects.

A. O. Smith Corp., Milwaukee, has booked 17,000 tons of steel for 100 miles of 20-inch pipe line for an unidentified western interest.

Cleveland—Steel and cast pipe demand shows a slight pick up. Several municipal projects are pending. Specifications from slum elimination and santitation programs are expected as soon as the cold weather breaks.

New York—Principal activity in the cast pipe market is furnished by purchases of the procurement division, United States treasury department, New York. This division is in the market for 406 tons for work in New York city and considerable additional tonnage for New York is ex-

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UNITED STATES STEEL

US STEEL

pected to come out soon. Considerable tonnage also is expected to be placed soon for work in Westchester county, N. Y.

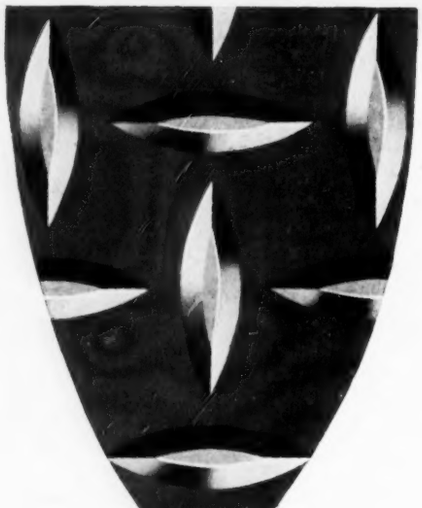
Birmingham, Ala.—Shipments of cast pipe continue active. The outlook for additional new business is bright. The West still continues in the market for considerable tonnage of pipe.

San Francisco—Cast pipe awards aggregated close to 1000 tons, bringing the total for the year to 4281 tons, compared with 2139 tons for the corresponding period in 1935. The largest award in the week went to United States Pipe & Foundry Co., for 877 tons of 18-inch pipe for Antioch, Calif. New inquiries include 717 tons of 10 to 16-inch, class E to H pipe for San Francisco, bids Feb. 14.

Seattle—New projects are developing and several contracts of importance are pending. Pacific States Cast Iron Pipe Co., Provo, Utah, took 350 tons for McCammon, Idaho. Olympia, Wash., plans purchase of a small tonnage of cast iron mains. Morton, Wash., will open bids Feb. 17 for 10,000 feet, 10-inch wood or steel gravity mains, and 18,000 feet of cast iron distributing pipe.

"A.W." ROLLED STEEL FLOOR PLATE

Super-Diamond pattern shown actual size.



Available also in Diamond, Diamondette, and other patterns to meet all requirements.

A COMPLETELY SAFE TREAD

—from every possible angle, under any condition. For light and heavy duty. A sanitary flooring that drains quickly, is easily kept clean. Low first cost. No maintenance cost. PERMANENT. Immediate delivery in various patterns to meet all requirements.

ALAN WOOD STEEL COMPANY
CONSHOHOCKEN, PA.
BRANCHES:
Philadelphia, New York, Boston, Los Angeles, San Francisco, Seattle, Houston

110 YEARS' IRON- AND STEEL-MAKING EXPERIENCE

Steel Pipe Placed

17,000 tons, 100 miles, 20-inch, for unidentified western pipe line, to A. O. Smith Corp., Milwaukee.

Cast Pipe Placed

877 tons, 18-inch, Antioch, Calif., to United States Pipe & Foundry Co., Burlington, N. J.

350 tons, for McCammon, Idaho, to Pacific States Cast Iron Pipe Co., Provo, Utah.

300 tons, 4 to 20-inch, Pittsfield, Mass., to United States Pipe & Foundry Co., Burlington, N. J.

275 tons, 12 and 6-inch, Buffalo, to United States Pipe & Foundry Co., Burlington, N. J., through procurement division, United States treasury department, New York.

250 tons, 4 to 10-inch, Milton, N. H., to Warren Foundry & Pipe Corp., Everett, Mass.

220 tons, 54-inch, Massachusetts metropolitan sewer division, to Warren Foundry & Pipe Corp., Everett, Mass.

130 tons, 8-inch, Hopkinton, Mass., to Warren Foundry & Pipe Corp., Everett, Mass.

103 tons, 14-inch, Worcester, Mass., to Florence Pipe Foundry & Machine Co., Florence, N. J.

100 tons, 6-inch, Chicopee, Mass., to Warren Foundry & Pipe Corp., Everett, Mass.

80 tons, Milton, Mass., to Warren Foundry & Pipe Corp., Everett, Mass.

Cast Pipe Pending

7000 tons, Cicero, Ill.; bids rejected.

717 tons, 10 to 16-inch, class E to H, San Francisco; bids Feb. 14.

491 tons, Boston; Warren Foundry & Pipe Corp., Everett, Mass., low on 410 tons for Boston and Haverhill, Mass.; Florence Pipe Foundry & Machine Co., Florence, N. J., low on 80 tons for Fall River, Mass.

406 tons, 6 and 12-inch, New York, bids opened Feb. 7 by procurement division, United States treasury department, New York.

390 tons, Falmouth, Maine, general contract to John MacDonald Construction Co., Newton, Mass.

267 tons, 4 to 12-inch, King county, Washington; bids opened.

228 tons, 10, 12 and 14-inch, saw mill project, Westchester county sanitary committee, White Plains, N. Y.; White & Cutieri, Elmsford, N. Y., low.

166 tons, 14 and 18-inch, Blind Brook and South Yonkers projects, Westchester county sanitary committee, White Plains, N. Y.; Fred Gabriele, 276 Reservoir avenue, Bronx, New York, low.

125 tons, 2-inch, Los Angeles; bids opened.

125 tons, 6 and 8-inch, for Yakima, Wash.; bids Feb. 10.

100 tons Harwich Mass., water system; Whitman & Howard, Boston, engineers.

Cold Finished

Cold Finished Prices, Page 65

Pittsburgh—With the 2.10c, base, Pittsburgh, continuing quotably un-

changed on cold-drawn carbon bars, as well as 2.95c base on cold-drawn alloy bars, the market is without notable feature as automotive buying continues to dwindle. Specifications from other consuming industries are in small lots.

Transportation

Track Material Prices, Page 65

Award by the Bessemer & Lake Erie and Union, both subsidiaries of the United States Steel Corp., of 3000 hoppers and gondolas and 24 switching and freight locomotives forms the most important current buying by railroads. High-tensile, light-weight steel will be used in 2000 of the cars and copper-bearing steel in the remainder. Details of the distribution will be found below.

An important road is inquiring for 31,000 rolled steel wheels and 17,600 steel axles, with probability of the order being closed shortly. Inquiry for light rails and steel cross ties in the Pittsburgh district is the heaviest in several years, with considerable buying apparently imminent.

Chicago, Milwaukee, St. Paul & Pacific is expected to distribute orders for 30,000 tons of rails this week. The same road has announced intention to spend about $5,000,000 for 1000 automobile cars, 500 gondolas, 34 passenger train cars and one locomotive. Cornwall railroad, subsidiary of Bethlehem Steel Corp., Bethlehem, Pa., is inquiring for 20 ore cars.

Bethlehem Steel Corp., through its office in Seattle, has booked 8500 tons of tie plates for the Union Pacific and 2000 tons for the Northern Pacific. Bethlehem has also booked 250 tons of 110-pound girder rails for street railway use in San Francisco.

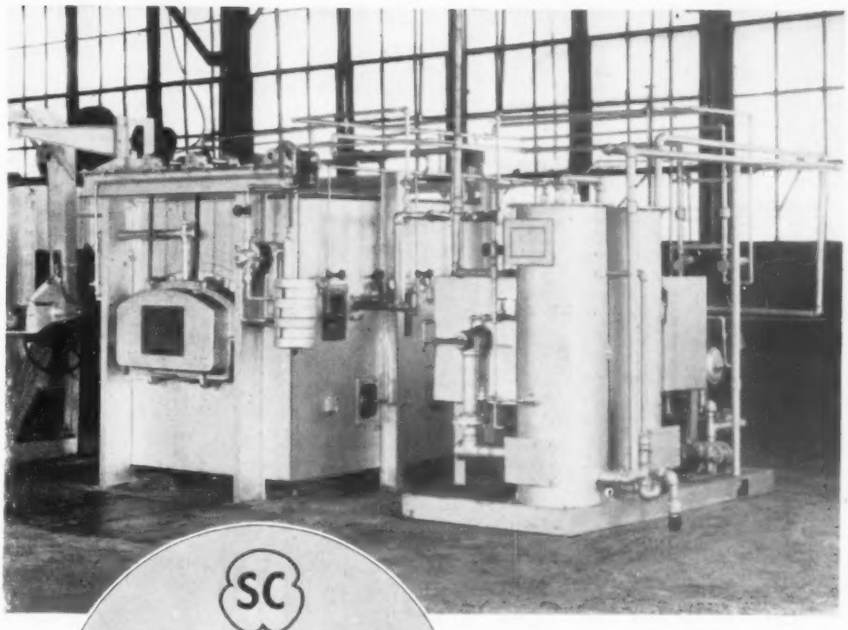
New York Central is expected to distribute about 38,000 tons of rails and accessories early in the week of Feb. 10.

Colorado Fuel & Iron Co., Denver, has booked a tonnage of steel rails from the Denver & Rio Grande Western and an order for steel for 16 bridges from the Southern Pacific. The bridges will be fabricated by the Midwest Steel & Iron Works, Denver.

Approximately 10,200 feet of track and accessories will be required for the proposed free port development of the city of New York on Staten Island.

Domestic railroads committed themselves for construction of 2050 freight cars in January, as against 10,050 in December, during which the Pennsylvania closed on its large

FOR MAXIMUM OPERATING ECONOMY



SC

built this Batch-type Carburizer with Armstrong's Brick

Recently installed in the plant of the Tyson Roller Bearing Company, of Massillon, Ohio, is this Batch-type Carburizer constructed by the Surface Combustion Corp., Toledo, Ohio. Its efficiency is guarded with Armstrong's High Temperature Insulation.

SURFACE Combustion's Batch-type Carburizer, built for the Tyson Roller Bearing Company, Massillon, Ohio, brings a new conception of the fuel savings and operating efficiency possible with this kind of furnace. Estimated consumption of natural gas fuel is 364 C. F. H. for 1230 lbs. work and container, at a temperature of 1800° F.

In the construction of this high efficiency carburizer, Armstrong's Brick plays an important part. Walls and floors are built of 4½" Armstrong's EF-22 Insulating Fire Brick, backed by 2½" Armstrong's A-25 Insulating Brick and 4½" Armstrong's N-16 Insulating Brick. Arch construction is 9" Armstrong's EF-22 Insulating Fire Brick with a backing of 4½" Armstrong's N-16 Brick.

Use of Armstrong's EF Insulating Fire Brick permits thinner walls, with a consequent sharper furnace, shorter heating time, and a real saving on fuel costs. The panel at right lists the three Armstrong's Brick used in the Surface Combustion Batch-type Carburizer, and other Armstrong High Temperature Insulation products. For brief facts on all Armstrong's Brick ask for the new folder "Armstrong's High Temperature Insulation." Armstrong Cork Products Co., Building Materials Division, 985 Concord Street, Lancaster, Pennsylvania.

High temperature products in Armstrong's complete insulation line include:

ARMSTRONG'S N-16 INSULATING BRICK for temperatures up to 1600° F. behind the refractory.

ARMSTRONG'S N-20 INSULATING BRICK for temperatures up to 2000° F. behind the refractory.

ARMSTRONG'S A-25 INSULATING BRICK for temperatures up to 2500° F. behind the refractory.

ARMSTRONG'S EF-22 INSULATING FIRE BRICK. Light-weight semi-refractory brick for direct exposure up to 2200° F.

ARMSTRONG'S EF-26 INSULATING FIRE BRICK for direct exposure up to 2600° F.

ARMSTRONG'S V-18 BLOCK. Insulating block for use up to 1800° F.

Armstrong's

HIGH TEMPERATURE INSULATION

program, and 24 in the corresponding period of 1935. Further comparisons follow:

	1936	1935	1934	1933
Jan.	2,050	24	152	3
Feb.		806	19,725	0
March		0	30	5
April		350	800	50
May		2	717	8
June		5,151	1,835	500
July		500	19	306
Aug.		200	105	202
Sept.		875	7	23
Oct.		1,250	75	514
Nov.		100	254	533
Dec.		10,050	110	316
Total		19,308	23,829	2,460

Locomotives Placed

Bessemer & Lake Erie and Union, 24 switching and freight locomotives; Baldwin Locomotive Works awarded 15; Lima Locomotive Works, 5; and American Locomotive Co., 4.

Car Orders Placed

Bessemer & Lake Erie and Union, 3000 hoppers and gondolas; Pullman Standard Car Mfg. Co., Chicago, 1000 ninety-ton hoppers; American Car & Foundry Co., New York, 750 seventy-ton hoppers; General American Tank Car Corp., Chicago, 250 seventy-ton hoppers; Pressed Steel Car Co., Pittsburgh, 600 seventy-ton gondolas; Greenville Steel Car Co., Greenville, Pa., 200 seventy-ton copper steel hoppers; Magor Car Co., New York, 100 seventy-ton gondolas; Ralston Steel Car Co., Columbus, O., 100 seventy-ton gondolas; first three lots above to be of high-tensile, light-weight steel, remainder of copper steel.

Locomotives Pending

Chicago, Milwaukee, St. Paul & Pacific, one Hiawatha locomotive; on betterment program.

Car Orders Pending

Chicago, Milwaukee, St. Paul & Pacific, 500 gondolas, 1000 automobile cars, 20 coaches, two express and taproom cars, five parlor, two diners, five main and express and five baggage; program announced.

Cornwall railroad, Bethlehem, Pa., 20 seventy-ton ore cars; inquiry issued.

Rail Orders Pending

Chicago, Milwaukee, St. Paul & Pacific, 30,000 tons; distribution imminent.

Buses Booked

Mack Trucks Inc., New York; 160 buses for Portland Traction Co., Portland, Oreg.; to be built at Allentown, Pa.

Wire

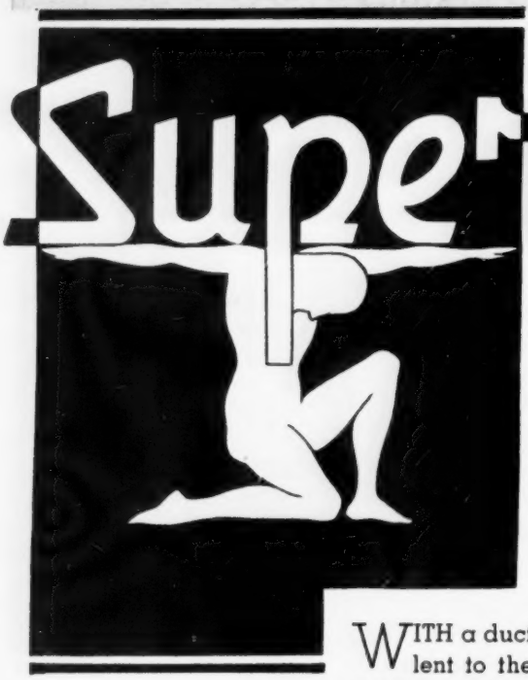
Wire Prices, Page 65

Pittsburgh—Severe weather continues to hamper shipments of wire products and in addition, sharply to curtail fresh buying interest. Producers have made no official change in base prices, contrary to some rumor, and are getting $2.40, base, Pittsburgh or Cleveland, for nails in some cases, but 2.30c for bright wire and 2.90c on spring wire is firm. In certain districts buyers claim they are getting nails on the basis of $2.10 per keg, which is 10 cents under the usual jobbers' allowance of 20 cents. Page Steel & Wire Co., Monessen, Pa., has recently received a contract for 156,000 square feet of wire fabric for mattresses to prevent bank erosion in the New Orleans district.

Chicago—Wire demand is steady and continues more active than a year ago, despite some recession from the active pace of early January. Recession from the latter period has been noted in both manufacturers' wire and merchant products. Unfavorable weather is contributing to light demand for the latter, while reduced schedules of automotive plants restrict manufacturers' wire activity. Other consumers of manufacturers' wire generally hold to even schedules and a gain in total business is looked for in March. Spring dating terms on fence have been announced.

Cleveland — Buying was steady during the week. The $2 advance on

for **SUPER** *ductility and strength*



Stainless Metals in CHROME and CHROME-NICKEL *ANALYSES*

WITH a ductility and strength equivalent to their sponsor's trade name, SUPERIOR Stainless Metals, in addition, offer a beautiful, permanent lustrous finish, non-corrosive and highly workable.

Permit a SUPERIOR representative the opportunity to broaden your product's sales appeal through standardization on these special alloyed steels.

Superior Steel Corporation

GENERAL OFFICE
3122 Grant Building
Pittsburgh, Pa.

WORKS AT
Carnegie, Penna.

SALES OFFICES
4305 Chrysler Bldg.
New York City
1017 Fisher Bldg.
Detroit, Mich.
2002 Girard Trust Bldg.
Philadelphia, Penna.
Steel Sales Corp.
129 South Jefferson St.
Chicago, Ill.
H. L. Brown,
2001 Carew Tower
Cincinnati, Ohio

wire rods is being received by most sellers of this product.

New York—Approximately 4000 feet of 2-inch galvanized mesh fencing, 10 feet in width will be required for the free port terminal schedule to be built on Staten island by the city of New York.

Philadelphia—Continued weakness in wire nails is reflected in the low bid recently submitted on 3800 kegs of nails for a housing development at Branchville, Md. The bid, by the Bethlehem Steel Corp., Bethlehem, Pa., was equivalent to 2.04c, Pittsburgh, according to eastern trade interests. The official market is 2.40c, Pittsburgh. Weakness in merchant wire products, however, has not been extended to manufacturers' wire, it appears.

Strip Steel

Strip Prices, Page 65

Chicago—The decline in automotive strip demand partially is offset by fairly active requirements of other consumers. Business shows some slackening compared with the rate a month ago, most of which is attributable to the curtailment in motor car production.

Cleveland — Some fairly substantial orders were received late last week from automobile manufacturers and partsmakers. New commitments from these sources in recent weeks have been about half of the December averages. Demands from miscellaneous manufacturing interests also are lighter.

Pittsburgh—As strip steel buyers continue to cut down specifications strip mills are reducing backlogs further and last week the average of operations was off 5 points to 50 per cent of capacity. The market is not entirely without feature for occasionally users of strip not associated with the automobile industry have been entering some fairly attractive orders. Strip steel prices are officially quoted unchanged at 1.85c, base, Pittsburgh, for hot-rolled and 2.60c, Pittsburgh or Cleveland, for cold-rolled, but $3 a ton concessions to the Detroit district have now become taken for granted.

Boston—An increase in demand for cold rolled strip steel has caused the cold rollers to increase their consumption of hot strip. Hot strip continues firm at 1.85c, base, Pittsburgh, with cold strip usually 2.80c, base, Worcester.

New York—Manufacturers of electric and household equipment are taking most current tonnage of strip steel. Automobile accessory requirements have not yet regained the momentum of the final weeks of 1935.

The new G. E. Light Meter measures lighting easily, accurately . . . and tells whether eyes are receiving adequate light for safe seeing.

BETTER LIGHTING

Speeds work . . . Reduces spoilage . . . Increases safety

● IN many shops, factories and offices, workers do not have one-fiftieth, often not even one one-hundredth, the light they need for efficient, safe seeing. With adequate lighting, even older workers can work more efficiently, errors and spoilage are decreased, accidents are lessened.

Now it is easy to tell whether your shop, factory or office is adequately lighted for safe seeing. The new, compact, General Electric Light Meter readily *measures* light with accuracy. It not only shows how much light is being received but also indicates the minimum required foot-candles for different seeing tasks.

In the interest of more efficient work and greater safety, you owe it to yourself, to your business associates, and to your employees to be sure that eyes are receiving adequate light for today's close-seeing tasks. This new Light Meter should be in the hands of every business executive.

For further information, telephone or write the nearest General Electric Incandescent Lamp Sales Division office.

MEASURE LIGHTING WITH NEW G. E. LIGHT METER

● This new General Electric Light Meter quickly and accurately tells whether the various processes or operations in your shop or factory are adequately lighted or not. No bigger than a pack of cigarettes, it is ruggedly made and sells for only $11.50.

GENERAL ELECTRIC

MAZDA LAMPS

Shapes

Structural Shape Prices, Page 64

Chicago—Despite the relatively large tonnage of structural material pending, orders for fabricated work lately have been small and fabricators are figuring only a few projects taking larger lots. A considerable portion of the Illinois highway program for this year remains to come up for bids, with several thousand tons pending for work on which bids already have been taken.

Pittsburgh—Actively listed among structural inquiries for the near future is a total of 4000 tons for over 25 grade crossing elimination projects in Pennsylvania, the largest of which is for 1000 tons in a job in Lawrence county. Plans are being developed at Harrisburg, Pa. Allegheny county's PWA bridge building program is still delayed by legal entanglements. Shapes are 1.80c, base, Pittsburgh.

Cleveland—Increase in buying is not expected until more favorable weather. The general market is quiet. No bids were obtained on the Lorain county bridge project, 1700 tons, estimates being too high.

Boston—Demand for structural steel comes mainly from WPA awards. Practically all fabricators in this district have at least some work. The market on plain material continues firm at 1.90c base, Bethlehem, equivalent to 2.205c delivered Boston.

Philadelphia—Awards are more numerous, although the market is still far from brisk. The largest reported order to be booked by a district fabricator involves 2000 tons of navy construction at Pensacola, Fla., this business going to the Bethlehem Steel Corp, Bethlehem, Pa. Considerable public work is still pending. Prices are unchanged at 1.90c, Bethlehem, Pa., or 2.005c, Philadelphia.

Birmingham, Ala.—All structural steel fabricating shops are keeping busy and new business is reported steady, but in small tonnages. Ingalls Iron Works Co. here has been awarded 450 tons for a warehouse in Honolulu.

San Francisco—Structural lettings were the second highest for any week of the year, and totaled 3239 tons. To date 13,641 tons have been booked compared with only 4454 tons for the same period last year. Bethlehem Steel Corp. booked 1295 tons of H-columns for foundations for the new civic center, San Diego, Calif.

Seattle—Pending business involves several important tonnages but new projects are lacking. Fabricating plants as a rule are booked for 30 to 60 days.

Shape Contracts Placed

2200 tons, Davidson county court house, Nashville, Tenn., to Bethlehem Steel Corp., Bethlehem, Pa.

2000 tons, navy hangars and other buildings, Pensacola, Fla., to Bethlehem Steel Corp., Bethlehem, Pa.; approximately 1300 tons of reinforcing bars for this project were placed with the Virginia Steel Co., Richmond, Va.

1800 tons, public school 49, Brooklyn, N. Y., to Bethlehem Steel Corp., through John J. Kennedy Building Corp., New York.

1380 tons, three state highway bridges.

Shape Awards Compared

	Tons
Week ended Feb. 10	17,093
Week ended Feb. 3	28,510
Week ended Jan. 27	26,155
This week, 1935	20,305
Weekly average, 1935	17,081
Weekly average, 1936	23,481
Weekly average, January	28,322
Total to date, 1935	85,594
Total to date, 1936	140,890

Detroit's Newest Downtown Hotel

DETROIT LELAND

800 OUTSIDE ROOMS with BATH

$2.50 single $3.50 double

Famous for Fine Foods

Club Breakfasts—
30c . . . 50c . . . 75c

Lunches—
40c . . . 50c . . . 75c

Dinners—
75c . . . $1 . . . $1.25

From the moment you enter our doors you will know that here you are indeed a *guest*. You will appreciate the courteous, cheerful, but *unobtrusive* service for which the Leland is noted. You will revel in the luxury you have a right to expect in a hotel that's as modern as tomorrow's motor car. You will like the superbly convenient downtown location. We hope you will accept our invitation to make the Leland your home in Detroit.

GARAGE IN CONNECTION

(AT CASS AND BAGLEY AVENUES)

DETROIT

Los Angeles; 880 tons to Consolidated Steel Corp., Los Angeles; 300 tons to Minneapolis Moline Power Implement Co., Minneapolis; and 200 tons to Virginia Bridge Co., subsidiary of Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

1295 tons, H columns, foundations for civic center, San Diego, Calif., to Bethlehem Steel Corp., Bethlehem, Pa.

750 tons, high school, Watervliet, N. Y., to Bethlehem Steel Corp., Bethlehem, Pa.

730 tons, two state highway bridges, Salem, N. J., and Garfield, N. J., to Bethlehem Steel Corp., Bethlehem, Pa.

520 tons, Florence Stove Co. warehouse, Gardner, Mass., to Bethlehem Steel Corp., Bethlehem, Pa.

475 tons, two state highway bridges, Phillips, Pa., and Norristown, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.

428 tons, plant for Libby, McNeil & Libbey, Honolulu, T. H., to Ingalls Iron Works Co., Birmingham, Ala.

370 tons, bridge, Seward county, Kansas, to Illinois Steel Bridge Co., Jacksonville, Ill.

363 tons, gates, Alamogorda dam, Carlsbad project, Wyoming, to unnamed interest.

350 tons, vocational school, Elizabeth, N. J., to Selbach-Mayer Co., West New York, N. J.

320 tons, women's ward buildings, Cranston, R. I., to Bethlehem Fabricators Inc., Bethlehem, Pa., through Matthew Cummings Co., Boston.

315 tons, Sixty-ninth street terminal, Philadelphia & Westchester Transit Co., Philadelphia, to Bethlehem Steel Corp., Bethlehem, Pa.

300 tons, buildings for disturbed men and women, Cranston, R. I., to James H. Tower Iron Works, Providence, R. I., through Matthew Cummings Co., Boston.

300 tons, underpass, Pierce county, Washington, to Poole & McGonigle, Portland, Oreg.; Malcolm & Bell, Portland, general contractor.

300 tons, Potato Slough bridge, San Joaquin county, California, to Moore Dry dock Co., Oakland, Calif.

300 tons, school, Robbinsdale, Minn., to Cowin & Co.

300 tons, lock, Peoria, Ill., to Lakeside Bridge & Steel Co., Milwaukee.

275 tons, bakery, Brooklyn, N. Y., to F. G. Schaefer Iron Works, Edgewater, N. J.

260 tons, warehouse, Greenville, Miss., for U. S. Gypsum Co., to Stupp Bros. Bridge & Iron Co., St. Louis.

240 tons, public school 127, Elmhurst, N. Y., to Ingalls Iron Works Co., Birmingham, Ala.

210 tons, replacement of two spans for the Reading Co., Sunbury, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.

210 tons, bridge, McPherson county, Kansas, to Kansas City Structural Steel Co., Kansas City, Mo.

175 tons, county office building addition, Buffalo, to Buffalo Structural Steel Co., Buffalo.

160 tons, bridge No. 5610, Minnesota, to American Bridge Co., Pittsburgh.

125 tons, armory, Red Bank, N. J., to Selbach-Mayer Co., West New York, N. J.

115 tons Horn & Hardart building, Brooklyn, N. Y., to Jones & Laughlin Steel Corp., Pittsburgh.

115 tons, public school auditorium and gymnasium, West Chester, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.

110 tons, high school, Palmyra, Pa., to Bethlehem Steel Corp., Bethlehem, Pa.

102 tons, building, Pearl Harbor, T. H., to Bethlehem Steel Corp., Bethlehem, Pa.

100 tons, under-crossing, near Phoenix, Maricopa county, Arizona, to unnamed interest.

100 tons, postoffice, Rahway, N. J., to Selbach-Mayer Co., West New York, N. J.

100 tons, armory, Westfield, N. J., to Selbach-Mayer Co., West New York N. J.

100 tons, sulphate building for Merrimac Chemical Co., Everett, Mass., to New England Structural Co., Everett.

100 tons, gantry crane and miscellaneous work, to Wallace Bridge & Structural Steel Co., Seattle.

Shape Contracts Pending

1800 tons, public school 113, New York; bids to be opened Feb. 11.

1000 tons, building, Buffalo, for Trico Products Co., Buffalo.

800 tons, school, Merrick, N. Y.; general contract to William Kennedy Construction Co., Brooklyn, N. Y.

800 tons, store and office building, Albany, N. Y., for A. P. W. Paper Co.

660 tons, four bridges, Bergen county, New Jersey.

500 tons, laboratory building, for Argonaut Realty Co., Detroit; bids received.

450 tons, bakery, Omaha, Nebr.

400 tons, pier 1, navy yard, Charleston, Mass.; bids to be asked soon.

300 tons, cranes, Grand Rapids stamping division plant, General Motors Corp., Grand Rapids, Mich.

300 tons, warehouse, Baltimore, for Young Analine Works.

200 tons, monastery building, Bronx, New York; bids Feb. 11.

177 tons, state highway bridge, St.

THE critical public has an eye for beauty as well as utility in judging equipment. Modern machinery must be pleasing and practical—must have both style and stability to win popular demand.

That is why machine designers make such frequent use of B & L

SMALL ROUNDS

for exposed shafts and other precision parts where highly polished surfaces are an important factor in the selling appeal of the equipment.

Cold drawn, ground and polished to a mirror finish, B & L Small Rounds will give that much-desired "swank" appearance to your products.

Available in $\frac{3}{4}$" diameter and under. Tolerances, plus .000" minus .002" and plus or minus .00025" for special accuracy. Ask for details.

BETTER MADE STEELS LABORATORY TESTED

Cold Drawn Bars and Shafting • Special Sections • Alloy Steels

BLISS & LAUGHLIN, INC.

HARVEY, ILL. *Sales Offices in all Principal Cities* BUFFALO, N.Y.

Johnsbury, Vt.; general contract to Earle C. Hayden, Barre, Vt.

170 tons, bridge, Milford township, Butler county, Pennsylvania; bids Feb. 11.

150 tons, bridge, Quincy, Mass.; general contract to Coleman Bros. Corp., Boston.

135 tons, including 60 tons for project in Upper Sandusky, O., and 75 tons for Cleveland Trust Co., 322 Euclid avenue, Cleveland, to Fort Pitt Bridge Works Co., Pittsburgh.

115 tons, bridge, South Kingstown, R. I.; bids opened Feb. 7.

Unstated, bridge, grade elimination project, Jamestown, N. Y.; bids Feb. 10.

Unstated, bridge, Chemung county, Elmira, N. Y.; bids Feb. 11.

Reinforcing

Reinforcing Bar Prices, Page 65

Pittsburgh—Analysis of the 11 bids on 8,994,000 pounds of reinforcing steel bars for the Wiota, Mont., dam recently shows a delivered price of 2.82c per pound submitted by all mills, which is $6 a ton under the official market and apparently was a move on the part of producers to eliminate any jobbers' bidding on this tonnage. The bars, which were awarded to Youngstown Sheet & Tube Co., were mainly 1½-inch bars, 23 feet 4 inches long. There were nine items, balance of which were 1¼ and 1½-inch bars in lengths from 10 feet to 26½ feet, straight and deformed in squares in accordance with specifications. Rust Engineering Co., Pittsburgh, is placing about 800 tons of new billet bars with Carnegie-Illinois Steel Corp., for the Schenley distillery building.

Cleveland—Road work prospects are good, with railroads maintaining a steady flow of business. Ohio Bell Telephone Co. will require considerable tonnage for its Cedar exchange project. State work is promising, the aggregate of small tonnages being substantial.

Chicago—Activity in public construction is providing a steady though moderate volume of reinforcing bar business. Most awards lately have been for bridge, sewer and filtration plant building, with larger orders totaling around 1500 tons. Additional bars remain to be placed for sewer work in this district, while the Illinois highway program involves a large tonnage. Unfavorable weather continues to handicap contractors, and work on a number of projects will be delayed.

Philadelphia—Included in the few outstanding tonnages to be awarded is a lot of 200 tons of rail steel bars for the Sun Oil Co. at Marcus Hook, Pa. A substantial tonnage of bars will be required for a large indoor ice skating rink to be built by the Hershey Lumber Products Co., Hershey, Pa. 1300 tons for navy construction at Pensacola, Fla., have been placed with the Virginia Steel Co., Richmond, Va. Bar prices continue unsettled.

New York—Some attractive new inquiries are out, and a large amount of work is expected to come up for action in the next two months. Prices on concrete reinforcing bars continue to range from 2.05c to 2.40c base, delivered, in this territory.

Boston—Demand for reinforcing bars is good but consists mainly of small tonnages. Only two recent lettings have involved 100 tons or more.

Behind the Scenes with STEEL

Clipped by Klips

THE VOICE OF KURLY KLIPS has spoken, just as we suspected it might following our recent (Jan. 27) diatribe on the matter. Big-hearted like, we reproduce a letter from J. M. LaRue, sales promotion department, Randall Co., Cincinnati, manufacturer of the clips. Parenthetical comments are ours:

Gentlemen:

"We don't care what you say about our Kurly Klips, just as long as you say something. . .

"We always appreciate humor. A laugh kills off dull monotony. And it takes a sense of humor, if nothing else, to kick your own industry in the face. (Wham!)

"After all, Kurly Klips are made of steel wire. Contrast your weak winchelling attitude (here! here!) with this quotation from a recent brass trade journal—'Probably you've seen some of the new circular spring steel paper clips. This means added competition for the brass clips so long in use.'

"Now, those boys over on the brass journal are probably laughing at their contemporary STEEL. Somebody's face red? Well, quit blushing. Those brass boys should have SHRDLU on their payroll. (Make us an offer).

"Sure, the great American public is wearing Kurly Klips as 'Round and Around' buttons—5,000,000 isn't even a whisper—but the shout is that the resulting publicity has done a magnificient (?) job of making this new klip (sic) familiar from coast to coast.

"And then, your opinion to the contrary, a lot of people really like our Kurly Klip—it's thin, tempered and round. Individual, too. You'd be surprised how many advertisers have held up their mailings so that they could give their promotional matter the added individuality of this smart klip.

"We've got some pretty good writers on our payroll (you're telling us?) and they all have good senses of humor. Right now, they are coaxing to release this entire story to some leading business magazines. You'll just have to admit this entire episode is a scream. (Oh, oh, our ribs!) When a paper clip has a song of its own, that's news, but when a trade journal kicks its own industry in the face, well, you name it."

In spite of the brass boys and the great American public, we'll stick to our old long clips (sic! sic!) which, incidentally, are made of *steel* wire. Our poor industry lies writhing in the dust, apparently, the outline of our foot clearly etched on its puss. But we're not afraid, the industry can take it.

Of course, we have no grudge against this new business built "on a song"; it's swell that they are using lots of nice thin, tempered and round steel wire. No doubt many like the "individuality of this smart klip." But we don't.

• • •

Naughts to You

WE READ in one of our favorite newspapers that Mr. Tom Girdler, Republic Steel Corp. chief, in talking about the alloy steel situation, said that the number of possible combinations of alloys of iron, carbon, chromium, nickel, molybdenum, tungsten, silicon and copper had been computed to be 775 followed by some 1974 ciphers. This would make an interesting figure if set up in regular form and we thought some of letting you see it, but a slight calculation showed that it would take 55 lines in one of these columns or nearly one-half the entire department. Furthermore, if we did, some wag would probably say there's nothing to it.

• • •

Obliging

TALK about service! We ran an item in this column a week or so ago about a gentleman who was looking for a substitute for cadmium plating which would retain high luster and survive weather attacks. Quicker than you could say Dr. Francis E. Townsend, two of our enterprising reader-manufacturers wrote in asking the name of this inquirer.

Beaming at this flattering compliment, we have arranged to introduce these people. Maybe they can work out a deal.

—SHRDLU

Concrete Awards Compared

	Tons
Week ended Feb. 10	3,162
Week ended Feb. 3	24,196
Week ended Jan. 27	12,888
This week, 1935	867
Weekly average, 1935	6,862
Weekly average, 1936	10,930
Weekly average, January	9,556
Total to date, 1935	20,356
Total to date, 1936	65,585

Numerous small tonnages are pending.

San Francisco—Awards were the smallest for any week so far this year. Eight hundred tons were placed for the Alamogorda dam, Carlsbad project, Wyoming, and 500 tons for the Ogden-Brigham canal, Ogden River project, Utah. Bids have just been opened on 1280 tons for the Macy street subway, Los Angeles. New inquiries include 500 tons for the Motor Vehicle building, Sacramento, Calif.

Seattle — Construction projects continue steady, but tonnages as a rule are in less than 100-ton lots. Sound Construction & Engineering Co. has the general award for the University of Washington chemistry building, calling for about 650 tons.

Reinforcing Steel Awards

800 tons, Schenley Distillery Co. building, Schenley, Pa., to Carnegie-Illinois Steel Corp., Pittsburgh, through Rust Engineering Co., Pittsburgh.
800 tons, Alamogorda dam, Carlsbad project, Wyoming, to unnamed interest.
500 tons, Ogden-Brigham canal, Ogden river project, Utah, to unnamed interest.
200 tons, rail steel, office and laboratory, Sun Oil Co., Marcus Hook, Pa., to Taylor-Davis Inc., Philadelphia.
175 tons, addition to Sedro-Woolley hospital, Washington, to Northwest Steel Rolling Mills, Seattle.
147 tons, high school, Chico, Calif., to Truscon Steel Co., San Francisco.
140 tons, high school, Arbuckle, Calif., to Truscon Steel Co., San Francisco.
140 tons, plant addition, Continental Can Co., Seattle, to Bethlehem Steel Corp., Bethlehem, Pa.
130 tons, filtration plant, North Chicago, Ill., to Calumet Steel Co., Chicago.
130 tons, state hospital building, Westfield, Mass., to Truscon Steel Co., Youngstown, O.
100 tons, New England Chemical Co. building, North Woburn, Mass., to Jos. T. Ryerson & Son Inc., Chicago, through Austin Co., Cleveland.
100 tons, under crossing, Broadway terrace, Oakland, Calif., to Bethlehem Steel Corp., Bethlehem, Pa.
100 tons, state bridge, Ogle county, Illinois, to Calumet Steel Co., Chicago.
100 tons, library, Junior college, Sacramento, Calif., to Truscon Steel Co., San Francisco.
100 tons, city hall and jail, Tulare, Calif., to Kyle & Co. Inc., Fresno, Calif.

Reinforcing Steel Pending

5700 tons, Triboro bridge, New York; bids Feb. 11, 14 and 18.
650 tons, chemistry building, University of Washington, Seattle; Sound Construction & Engineering Co., Seattle, general contractor.
600 tons, Spokane postoffice; A. D. Belanger, Seattle, low.
585 tons, paving and completion of anchorage for Triboro bridge, New York; bids to be opened on Contract No. 60, Feb. 11.
585 tons, paving and completion of anchorages for Triboro bridge, New York; bids to be opened on Contract 61, Feb. 18.
560 tons, sewer, Rockford, Ill., to Concrete Engineering Co., Chicago.
500 tons, motor vehicle building, Sacramento, Calif.; bids Feb. 11.
265 tons, New Jersey highway route 25, section 26; bids rejected.
200 tons, ward building, state hospital, Norwalk, Calif.; bids opened.
176 tons, bridge at Bradley, Calif.; bids Feb. 9.
160 tons, New Jersey highway route 25, section 24; general contract to P. Camillo & Co., Westfield, N. J.
129 tons, gymnasium, Placerville, Calif.; bids opened.
127 tons, bridge near San Ardo, Monterey county, Calif.; bids Feb. 19.
100 tons, state hospital dormitory, Augusta, Me.
100 tons, grade elimination, Glendale, N. Y.; Wilson & English Construction Co., New York, low.
100 tons, Pennsylvania railroad bridge No. 8.50-B, Newark, N. J., general contract to J. Rich Steers Inc., New York.
Unstated tonnage, sewer, borough of Queens, New York; bids Feb. 11.
Unstated tonnage, Ellensburg normal school, Washington; Hendrickson & Ahlstrom, Seattle, general contractor.
Unstated tonnage, large indoor ice skating rink, Hershey Lumber Products Co., Hershey, Pa.; specifications expected shortly.

Fluorspar

Fluorspar Prices, Page 66

Gravel fluorspar for rail shipment

SPECIAL SEAMLESS SHELLS AND SHAPES

DEEP DRAWN TANKS, BOTTLES, ETC.

IS OUR SPECIALTY

This Square Seamless Drawn Tank is A Crosby Accomplishment

Stamping Specialists Since 1896

An Experience You Should Not Overlook
Send Us Your Next Specification

THE CROSBY COMPANY
BUFFALO, N. Y.

NEW YORK — CHICAGO — PHILADELPHIA — DETROIT — CLEVELAND

has been advanced $1.50 a ton to $17.50, Kentucky and Illinois mines. The market for barge movement continues $17.50. New business is seasonally quiet, while shipments are affected similarly though some small-lot buying occasionally appears.

Pig Iron

Pig Iron, Prices, Page 66

Chicago—New business is confined principally to carload lots, as foundry stocks have been reduced insufficiently to necessitate heavy buying. Consumption is sustained by active operations of farm implement, radiation and heating equipment, and machine tool manufacturers. Schedules of jobbing foundries also are fairly active. Production of automotive castings, however, has yet to improve over the reduced rate noted recently. While shipments are restricted, deliveries so far this year are ahead of the corresponding 1935 period.

Pittsburgh—In spite of good foundry operations, shipments have not gained to a proportionate degree. Apparently, most melters have adequate stocks on hand and are also including a heavy proportion of scrap in their melt. Several buyers, notable among which are radiator manufacturers, are still fairly steady specifiers of southern iron. Scrapping of both the Adrian furnace and Punxsutawney furnace at Du Bois, Pa., is removing two more former merchant stacks from western Pennsylvania.

Cleveland — Slight decline in automobile demand is made up by spot buying by other consumers. Consumption by sanitary ware manufacturers continues fair. Makers of railroad and heating equipment are releasing considerable tonnage.

Boston — Plans for blowing in the Mystic Iron Works blast furnace at Everett, Mass., continue to go forward. It is expected the furnace will be in production around April 1. The company has not yet opened its books for second quarter business, in fact, none of the sellers are quoting on second quarter. New buying is negligible. While current melt is at a satisfactory rate, it is being supplied largely out of shipments on contracts.

New York—A slight increase in new business is noted here, orders being confined principally to small lots. However, a substantial improvement is looked for in March.

Philadelphia—Sellers are confident that improvement will set in before the end of this month. So far this year new business has been spotty, but consumers have been drawing on stock to such an extent that it is believed that late February tonnage should show an appreciable gain. Prices are steady.

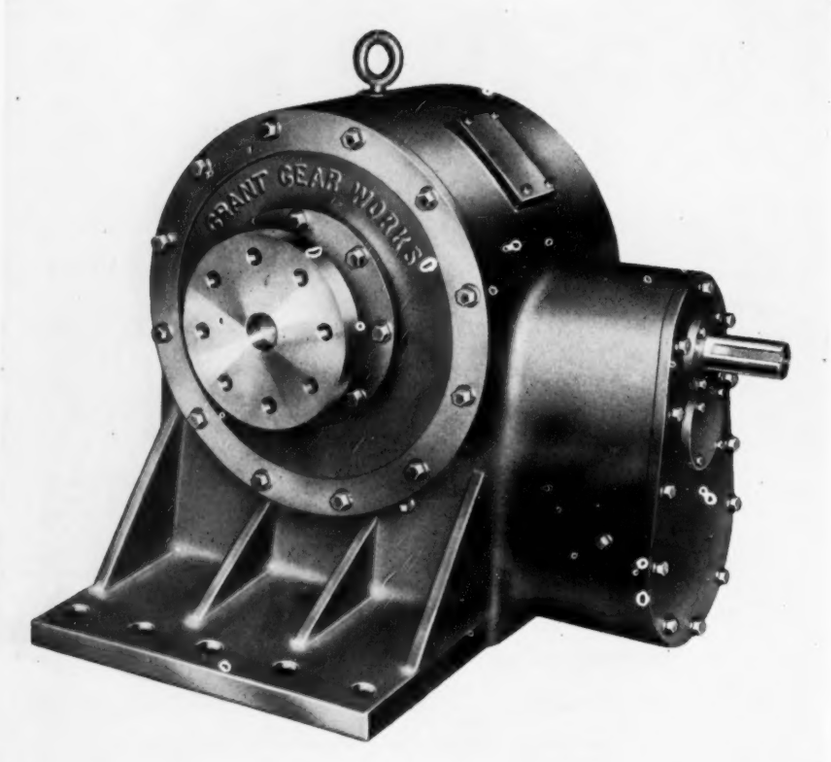
Buffalo — Sales are improving steadily, and the quarter is exceeding expectations both in shipments and new orders. Handling of raw materials has been very difficult during the past three weeks due to railroad congestion and weather conditions in storage yards.

St. Louis—Since the last week in January, shipments and new orders have increased moderately and the outlook for further betterment is good. The lengthy spell of sub-zero weather has been a handicap both to foundry operations and the movement of raw and finished materials. Purchasing by the more important melters, has not been resumed to any great extent. Buying in heavy volume is expected to begin late this month, and to be accelerated through March.

Cincinnati—Pig iron stocked by many melters last quarter has been exhausted, according to the specifications for prompt shipments entered this month. Shipments the past week have brought the tonnage rate near that of last November, supporting belief the melt likewise is akin to the fourth quarter.

Birmingham, Ala. — While no noticeable activity has started since the middle of January. The market is firm. Alabama furnaces produced 154,359 tons of iron in January, since June, 1931, excepting December, 1935.

Toronto, Ont. — Merchant sales are sustained, with some melters ordering iron to carry them through to the end of this quarter. New business is appearing in good volume and awards are totaling better than 1000 tons per week. Smaller melters are entering the market at frequent intervals. The daily melt is holding at better than 50 per cent. Prices are firm.



Typical illustration of what Grant Gear is doing to supply properly engineered Speed Reducers for the manufacturer who cannot use a standard job and must have a special design to accommodate a particularly trying situation. Ratio: 45-1. Horse Power: 25 at 1200 R.P.M. Weight: 2,000 lbs.

GRANT GEAR WORKS — BOSTON

Metallurgical Coke

Coke Prices, Page 65

In addition to heavy domestic demand for coke and coal, a sharp increase has occurred in Western Pennsylvania in buying of beehive foundry coke. Several Pittsburgh district foundries, including especially a large air brake manufacturer, have been buying at a fast pace. Prices on common grades, f.o.b. Connellsville, Pa., ovens, appear to have firmed up to better than the former minimum of $4 a ton, with the result that sellers are able to get $4.25. Premium foundry coke is not quite so active and remains un-

changed at $5.50 to $5.75, but Connellsville furnace coke at $3.50 to $3.65 is strong.

By-product coke demand in New England is steady and the price is unchanged. St. Louis consumers have curtailed activities because of cold weather and this has limited shipments somewhat. January movement was about equal to that of December. Chicago consumers take tonnage steadily in spite of the cold, with January about even with December. Birmingham, Ala., producers continue the same rate of activity and find demand little changed.

Scrap

Scrap Prices, Page 67

Pittsburgh—Carnegie-Illinois Steel Corp. unexpectedly entered the scrap market Feb. 5 with orders for about 30,000 tons of No. 1 heavy melting steel for delivery to four Pittsburgh district consuming points. The price paid by this mill was $14.75 a ton for ordinary No. 1 and $15.25 for the railroad grade of No. 1 or equivalent. Preference was extended to yards in the district and it is presumed that a large share will be filled out of yards, due to the present weather which has frozen scrap collection and prevents water transportation. Based on these buying prices, both grades of No. 1 steel here have advanced 25 cents a ton and the present strong market has reflected itself in practically every other classification.

Chicago—Most scrap prices have advanced 25 to 50 cents a ton under the stimulus of active bidding by dealers and brokers. While last mill purchases of No. 1 heavy melting steel were made at $13.75, brokers are offering $14 more freely and this grade may be quoted 25 cents higher at $13.50 to $14. Cold weather continues to handicap gathering, preparation and inspection of old material, though no shortages have been reported.

Cleveland—Steel and iron scrap is strong but not active at the moment. Sellers and buyers are marking time as shipments on contracts go forward. Supplies are scarce and sellers are slow to let go. Advances of 25 to 75 cents have been made in various grades. Prices in the Valleys are also up slightly.

New York—Some iron and steel scrap dealers are incurring losses on contracts, directly traceable to severe weather. For instance, dealers are paying as high as $8.50 f.o.b. cars, New York, for heavy breakable cast for shipment to Harrisburg, Pa., at $12 delivered, despite the fact that the equivalent New York price is $8.25. New compressed sheets have moved up to $8.50 to $8.75, No. 2 or auto steel to $7.75 to $8 and stove plate for mill consumption to $6 to $6.50.

Buffalo—Small lot sales of specialties have established new high prices of the recent movement in these grades and the whole tone of the market is stronger in spite of lack of tonnage buying. No. 1 machinery cast has brought $13.50 and dealers are having difficulty in covering at this price. Malleable and short steel rails have brought $15.50 and upwards and other grades and proportionately strong. Dealers insist No. 1 heavy melting steel is worth at least $13 for local delivery and turn a deaf ear to all overtures below this price.

Boston—Iron and steel scrap yards in New England continue to operate under difficulties because of snowfalls. Prices are firm and all the scrap offered finds ready takers.

Philadelphia—Continued severe winter weather has added further strength to the scrap market. No. 1 melting steel is unchanged at $12.50 to $13, delivered, although collection continues difficult. The highest consuming price for No. 1 steel report-

HE WORKS FOR NOTHING
..yet he costs you plenty
N. P. L.
(NEEDLESS POWER LOSS)
EVERYWHERE N.P.L. is a drag on efficiency. Daily he holds back the wheels of progress, and is the cause of costly shutdowns. He is an expensive parasite, costing you plenty every day. Morse Positive Drives, properly engineered and installed, will eliminate N. P. L.

Only Morse Roller Chain Has This Feature

A joint of unique construction, the first improvement in roller chains for years, enables lubrication to reach all wearing surfaces. Morse Roller chains wear less . . . last longer on difficult drives . . . cost less in the long run.

This superiority is due to ease of lubrication, and to the use of better, more wear-resistant materials, and more efficient design.

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ed to date is $13 and on certain sales made at $12.50, delivered, earlier in the year, dealers are having to pay that amount and higher in order to cover. One large dealer is reported to be paying $12.75 on certain shipments for Coatesville, Pa., against tonnage previously booked at $12.50.

Cincinnati — Weather conditions are playing a role in the iron and steel scrap market without affecting quotations or consumer operations. District mills have made no new tonnage commitments, and recent prices in the Valley are not adequate to draw material from here. The market is strong and unchanged.

Detroit — Prices again have advanced, with No. 2 heavy melting steel, compressed sheets, borings and turnings, and cast grades up 25 cents. Strength in the market has developed from the heavier demand from Youngstown and Pittsburgh mills. Scrap offerings by automotive plants continue to decline in keeping with reduced operations.

St. Louis—The market for iron and steel scrap continues strong, with additional advances. Buying has not broadened, but offerings are tight from all quarters, and prospects for increased supplies are not promising.

Toronto, Ont. — Revised prices on iron and steel scrap have been issued by both Toronto and Montreal dealers and advances in most lines range from 50 cents to $2 per ton.

Welding Equipment & Supply Co., manufacturer of welding supplies and equipment, has moved into new quarters at 1034 St. Clair avenue, Cleveland, from 3528 East Seventy-sixth street. This change was effected Feb. 1.

Warehouse

Warehouse Prices, Page 68

New York—Volume still is considerably less than that of last fall, a condition which the jobbers lay to the severe weather. Prices are firm, with the exception of weakness in galvanized sheets due to sales of high grade second sheets at as low as 3.50 to 3.25c, base, delivered.

Foreign steel sold by certain jobbers is confined largely to mild steel bars and shapes. While these can be had in large lots for direct shipment at around 1.90c base delivered, the jobbers as a rule are getting around 2.40c to 2.50c, base, delivered, for these products.

Boston—Demand out of stocks here is close to the highest volume since the depression. Some jobbers are doing 60 to 70 per cent more business than a year ago. Generally they are doing better than in December and in some cases are equaling October, the previous top month. Prices are firm, with a shade of uncertainty in galvanized sheets. The only change is an advance of $5 a ton on hexagons, bar tees and zees which now are quoted 3.35c base delivered; bars and other bar shapes continue 3.10c.

Philadelphia—Leading jobbers report daily business at about the same rate as in January, when there was a decline of approximately 10 per cent from the preceding month. Severe winter weather conditions have had a retarding influence and the general trade expectation is that there will be little improvement before March.

Pittsburgh—Orders placed for jobber steel in the past week have been at an undiminished rate. The price structure, however, is not strong and several small jobbers in the district are trading beneath official levels.

Chicago—Business is making a favorable showing despite the adverse influence of severe weather. Sales continue heavier than a year ago, though little change has been noted the past two weeks.

Detroit — Sales continue fairly steady and at an improved rate compared with the volume a year ago. Some decrease still is noted from the December volume, however. Base prices are unchanged, but a reduction on larger purchases of galvanized sheets for city delivery has been effected through the institution of differentials. One to nine bundles now take 4.72c, base price. A discount of 25 cents per 100 pounds is allowed on 10 to 24 bundles and 50 cents for 25 bundles and over.

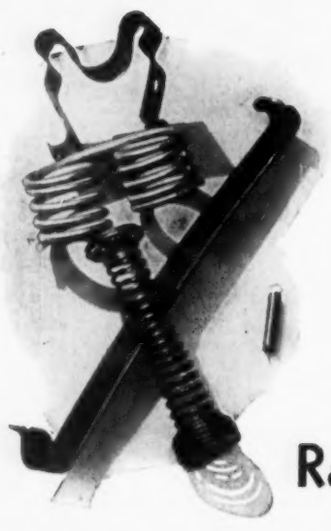
Cleveland — Tonnage has dropped from the January level, due mainly to bad weather. A considerable amount of unshipped tonnage was left over from last month.

Cincinnati—Sales have not recovered from dullness which is generally attributed to effects of unfavorable weather. Prospects for building materials in the spring remain uncertain. Prices are firm.

St. Louis—Weather during the past two or three weeks has been the main influence in business, holding down new buying, specifications, and shipments. There has been some call for emergency materials.

Seattle—The market shows little life, volume consisting of small tonnages out of stock, with an occasional car order. Local houses are somewhat disturbed by concessions on bars, shapes and plates effective in Portland, Oreg., territory, but have taken no steps to meet the reduction.

RAYMOND



Springs

For fifty years Raymond has been producing high quality springs, wire forms and stampings—

A modern up to date plant—the use of high grade materials and careful heat treatment *plus* Raymond experience should be able to—and can—end your spring troubles.

Let us help you with the proper spring design—and let us quote you on your requirements.

Raymond Mfg. Co.
Corry, Pa.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 65

Resumption of more active buying of bolts and nuts is awaited to provide a more thorough test of prices. Quotations have been fairly steady on recent business, though some buyers still are drawing on stocks accumulated prior to the last price increase. Consumption by railroads and farm implement manufacturers at Chicago shows moderate gains over a year ago, with further improvement by the former in prospect. Rivet demand is steady.

though in only moderate volume.

Pending volume at Cleveland shows favorable strength and future bookings for Pennsylvania, Bessemer & Lake Erie, and Union railroads indicate a promising market. Automotive demand is steady.

Semifinished

Semifinished Prices, Page 65

A new list of extras on semifinished carbon steel, including ingots, blooms, billets, and slabs, rerolling billets, blooms for seamless pipe, and sheet bars, has been issued by Carnegie-Illinois Steel Corp. for immediate effect. The principal change other than a reclassification of terminology is in silicon extras where the minimum of the range agreed upon shall determine the extra. When a maximum limit only is specified over 0.30 silicon, the minimum of the highest standard range within the specified limit shall determine the extra. Extras for silicon are $2 up for 0.16 to 0.20, and extra of $4 for 0.21 to 0.40, both minimums in any standard range; $2 for 0.16 to 0.20 where a minimum limit only is specified and $4 for 0.21 to 0.40 where minimum limit only is specified. Minimum, maximum or range not specified, as well as any standard range where minimum is 0.15 or under, are base.

In forging quality billets, the base size continues to be 6 x 6 to 9 x 9-inch for squares or rectangles of equivalent area, with extras above and below these sizes.

In a quiet market, sheet bars are exceeding demands of other semifinished products with rerolling billets second. Base prices at Pittsburgh are quoted $29 for rerolling billets and $30 for sheet bars.

Tin Plate

Tin Plate Prices, Page 64

Pittsburgh—Though the leading tin plate producer averaged production at 67-70 per cent last week, due chiefly to the reopening of a nearby Pittsburgh works which had been idle, the average of all operations for producers was nominally unchanged at 60 per cent. A preponderantly heavy share of the present tin plate output is going into can-makers' hands for production of general-line cans, as mills' stocks of tin plate, largely for packers' cans have not been liquidated to any noticeable extent. In some packers' canned commodities retailers are heavily stocked. In peaches, for example, retailers' stocks are some 225 per cent over a year ago. The tin plate market holds at $5.25 per base box, with quotations nominally unchanged on tin mill sizes of black sheets at 2.75c, Pittsburgh.

Quicksilver

New York—Quicksilver prices are steady with new demand limited to scattered small lots. Shipments against old orders are moving well but supplies of domestic metal remain scarce. Small lots are quoted unchanged at $78 to $79, a virgin flask, some recent two-flask business going at $80.

Ferroalloys

Ferroalloy Prices, Page 66

New York—Shipments of all ferroalloys are in good volume. All prices are unchanged. With the exception of ferromangenese and spiegeleisen, which are contracted for on a quarterly basis, the other ferroalloys are covered for the full year. These yearly contracts cover the full year's requirements but do not guarantee prices over that period; they contain an option permitting of price changes. Under these options, any change in prices to apply to second quarter will have to be communicated to consumers by March 15.

Steel in Europe

Foreign Steel Prices, Page 68

London—(*By Radio*)—Scarcity of pig iron in Great Britain is becoming acute, with stocks low and lighting of additional furnaces anxiously awaited. Exports of hematite are almost stopped. Steelworks are actively occupied in almost all departments. Exports of steel are expanding and large domestic orders are coming in. Exports of galvanized sheets are dull and tin plate trade is quieter.

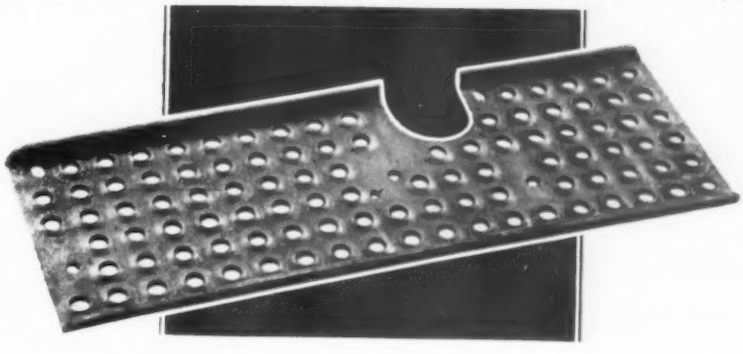
The Continent reports export trade is slightly better, especially British and Russian buying. The French market is improving.

Coke By-Products

Coke By-Product Prices, Page 65

New York—Whereas imports of sulphate of ammonia at one time were so heavy as to cause domestic producers to adopt the policy of quoting "f.o.b. cars at Atlantic and Gulf ports" in order to be in a better position to meet the competition, domestic producers now have to think hard in order to recall any recent cases

RAILROAD SAFETY via STAMPINGS



RAILROADS, as with industry in general, are looking-up to the steel stamping as a combined economic and effective method of application to their equipment or product. This freight car step—a stamping by Parish—additionally serves a major safety factor by imparting a sharp, self-cleaning tread impervious to ice, snow, grease and wet shoe soles.

Parish cites this example as but one of many improvements that have been brought about through an engineering service that likewise belongs to you . . . May we serve?

PARISH PRESSED STEEL CO.

Specialists in difficult stamping design

Robeson & Weiser Sts., READING, PA.

Pacific Coast Rep.: F. Somers Peterson Co., 57 California St., San Francisco, Cal.

where they have lost important business because of imports. Nevertheless the practice of quoting at seaports continues to be followed generally in the industry. The let-down in the automobile industry has not been followed by any familiar decline in demand for coal tar distillates. Naphthalene is the only product in which the supply is inadequate to meet demand.

Toro Mfg. Co., Snelling avenue, Minneapolis, manufacturer of power lawn mowers, has been changed from a Delaware to a Minnesota corporation, and the firm name has been changed to Toro Mfg. Corp. All former officers and directors have been retained.

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in NEW YORK CITY

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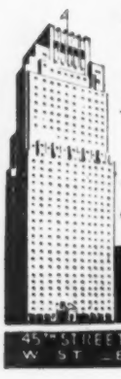

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Hotel PICCADILLY

45TH STREET JUST WEST OF TIMES SQUARE
WILLIAM KOONES MANAGER

Nonferrous Metals

Nonferrous Metal Prices, Page 60, 61

New York—Steady price levels were maintained in the major nonferrous metal markets last week. Fair to moderate business was done in lead and zinc while sales of zinc and tin were light.

Copper—Most observers anticipate increasing demand for copper and look for possibly higher prices this month. Sales so far this month have been fair but have been retarded by uncertainty over TVA. All first hands continued to quote electrolytic unchanged at 9.25c, Connecticut.

Lead—New purchases declined from the active rate of the previous week. The industry has made marked improvement statistically with stocks cut 4326 tons during December. Prices held firm at 4.35c, East St. Louis.

Zinc—Shipments continued to hold at a fair rate although sales last week were light. Prices recovered from recent unsettlement and held steady last week at 4.85c, East St. Louis, for prime western.

Tin—Consumers showed only light buying interest but prices held fairly steady and closed at 47.62½c on Straits spot. Market fluctuations were due mostly to exchange movements. World visible supplies were cut further during January.

Antimony—Prices held unchanged in a quiet market. Chinese and American spot held at 12.87½c, New York.

Activities of Steel Users and Makers

VAN DORN IRON WORKS CO., Cleveland, of which F. G. Smith is president, last week re-elected all officers, announced that the company will broaden its line to include the manufacture of industrial trucks and tractors, and reported better demand for jail and railroad equipment.

♦ ♦ ♦

Allis-Chalmers Mfg. Co., Milwaukee, has moved its Cincinnati, O., district sales office to the Chamber of Commerce building, with W. G. May continuing in charge as district sales manager.

♦ ♦ ♦

Harry D. Harvey, trading as Monarch Engineering & Mfg. Co., has been reorganized and the business transferred to a new corporation organized as the Monarch Engineering & Mfg. Co., 4221 Curtis avenue, Baltimore.

♦ ♦ ♦

Struthers-Wells Co., Warren, Pa., manufacturer and engineer of steel and alloy steel equipment, has appointed Robbins & Robbins, 504 Howard avenue, New Orleans, district representatives, to cover the states of Louisiana and Mississippi.

♦ ♦ ♦

Detroit Rex Products Co., Detroit, has opened a new branch office at 201 North Wells street, Chicago, to cover Wisconsin, Illinois, and Missouri. The representatives placed in charge of this territory are G. P. Anstiss, S. B. Crooks, and C. L. Jung.

♦ ♦ ♦

Central Foundry Co., New York, has removed its Pacific coast sales office from San Francisco to 278 Fourth street, Oakland, Calif. John Ponsaing, district sales manager, and E. A. Keithley and K. P. Hughes, sales representatives, will make their headquarters at this new office.

Equipment

New York—Although some machine tool sellers report a slight drop in sales since the first of the year, others report January books as good as for any month last year. Users are more inclined to delay closing on inquiries than was the case last fall. However, the volume of new inquiries is good.

Chicago—Inquiries and contemplated purchases point to a continuation of good business in machinery and equipment during February. Machine tool sales are well maintained, being featured by fairly good diversification as to buyers. Farm implement plants are making few major purchases, but railroads are slightly more active. Electro-Motive Corp. is buying a few miscellaneous items for its new plant here but has completed the purchase of more important equipment. Small tool demand is holding well. Foundry equipment remains moderately active both as to orders and inquiries.

Pittsburgh—Pittsburgh Crucible Steel Co., Midland, Pa., division of Crucible Steel Co. of America, is producing copper-covered steel wire at the plant in East Liverpool, O., which it recently leased. The latter plant was formerly operated by the National Drawn Steel Co. Formerly it was reported that the Atha works of Crucible Steel at Harrison, N. J., manufactured copper-covered steel wire. Pittsburgh Crucible Steel Co.

has installed considerable annealing equipment at both the Midland, Pa., works and at the East Liverpool, O., property recently.

Seattle—Electric machinery and pumping units continue in good demand and machine tools are more active. Mining operators are beginning to enter market for their seasonal requirements.

Construction and Enterprise

Ohio

CINCINNATI — City, Charles E. Lex agent, room 143, city hall, will receive bids Feb. 11, for unload, haul, and stack pipe, and miscellaneous castings. Address department of water, division of distribution.

CLEVELAND — Saw & Knife Specialty Co. has leased a 2-story brick building containing 12,000 square feet of manufacturing space, at 6528 Carnegie avenue southeast, for a period of five years, with option to buy. Negotiations were made through Granger Factory Space Broker, 310 Hippodrome building, Walter R. Granger president.

CLEVELAND—Great Lakes exposition, Lincoln Dickey general manager, and R. G. Frisbee, 1803 Terminal Tower building, director of works, is taking bids as soon as possible for the erection of approximately 10,000 feet of wire mesh fence, 7-feet high, including gates, posts, etc. Specifications are being prepared.

CLEVELAND — Lakeside Welding Co. has leased, with option to purchase, the former plant of the Gluntz Brass & Aluminum Foundry Co., East 108th street and Harvard avenue, through Granger Factory Space Broker, 310 Hippodrome building.

CLEVELAND — Interstate Motors Freight System has leased 12,000 square feet of space in the former H. P. Nail Works plant at East Fortieth and Lakeside avenue northeast, through Granger Factory Space Broker, 310 Hippodrome building.

CLEVELAND — Dobecknun Co., 3315 Monroe avenue southwest, manufacturer of cellophane products, is constructing an addition to its plant, 115 x 120 feet, brick and steel, to cost about $60,000.

DAYTON, O.—Air corps, materiel division, Wright field, will ask bids Feb. 27 for truck bodies and equipment; Feb. 12, for switchplates and equipment; Feb. 24, for radial drill presses; and Feb. 20, for bomb hoists sling assemblies.

DAYTON, O.—United States army quartermaster, Wright field, is taking bids Feb. 21 for the sale of aluminum brass, bronze, and steel and iron scrap.

DAYTON, O.—City, F. O. Eichelberger manager, is contemplating sewage plant improvements, including the installation of two treatment tanks, 20 filter units, settling and sludge tanks, etc. Will also enlarge facilities at disposal plant on Eby road, by adding eight filter tanks, two digestion tanks, and two humus tanks. Project will cost $900,000. WPA director is H. J. Derivan, district No. 15, this city. WPA has approved allocation of $238,874.

DOVER, O.—City, Homer Keppler service director, will receive bids Feb. 20, for furnishing a year's requirements of electric water meters and distribution transformers.

MINERVA, O.—Owner, board of public affairs, Margaret Wright clerk, Harry E. George mayor, contemplates the installation of a new generator unit to replace the present one. Project will cost $35,000, and the council has authorized the board to prepare engineering plans.

OTTOWA, O. — Superior Canning Co., this city, J. W. Ossege manager, is making various improvements at its plant, including the installation of an additional boiler, two new retorts or process kettles, and other machinery.

PORT CLINTON, O. — Standard Products Co., Maple street, plans the erection of additional quarters and the installation of a considerable quantity of new machinery, in preparation for the production of a new sponge rubber.

RAVENNA, O.—H. L. Hubbell, county engineer, has acquired land here for gravel supply and contemplates the installation of a conveyor system.

New York

BUFFALO—The Arcade plant of the Keith R. Wilson Foundry Co., this city, producer of parts for Ford cars, was damaged by fire recently to the extent of approximately $150,000. The main building, machinery, and stock of the company were badly damaged.

BUFFALO—Trico Products Corp. has announced plans to expend $100,000 on a new plant building, which will increase capacity about 20 per cent.

NEW YORK—George Ehret Brewery Inc., Blandy, Mooney & Shipman, 38 Pine street, attorney, has purchased the former Leonard Eppig brewery, Evergreen avenue and Melrose street, Brooklyn, N. Y., at a cost of $500,000. The plant will be renovated and the most modern equipment will be installed. Arthur E. Duerr is president.

NEW YORK—Phelps Dodge Copper Products Corp., 40 Wall street, has filed plans at Elizabeth, N. J., for the addition of two buildings, one of which will cost $12,000. General contractor is Wigton-Abbott Corp., Plainfield, N. J. Work on these additions will start this week. The company is a manufacturer of copper wire and cable.

Indiana

GARY, IND. — Carnegie-Illinois Steel Corp. will start construction of the normalizing unit for its rail mill here, about March 1, to cost, including building and equipment, approximately $450,000. John Brunner, consulting engineer, will supervise construction of the unit. The building will be 85 x 500 feet and will have corrugated sheet steel walls and a metal roof.

INDIANAPOLIS — Inter - State Foundry Co. Inc., 3823 Massachusetts avenue, has been organized to do a general foundry business, by Leo R. Meyer, William F. McGlasson, and James E. Rocap, resident agent.

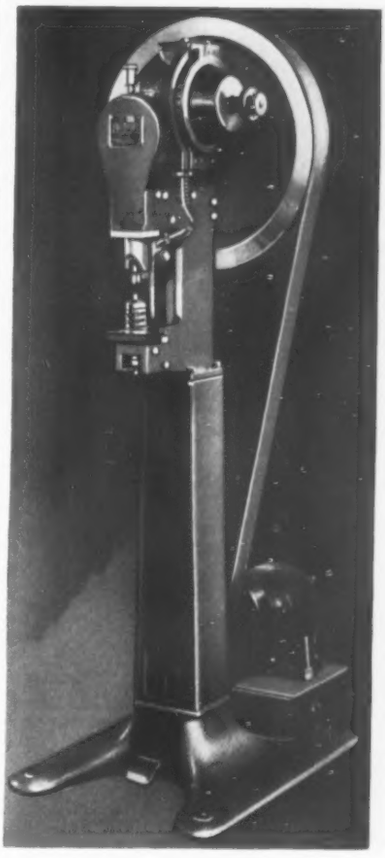
SOUTH BEND, IND.—Main Iron & Salvage Co. Inc., 2001 Main street, has been formed to manufacture automobiles, trucks, engines, and deal in iron, metals and junk, by Julius E. From, resident agent, and Rubin Silverman.

Michigan

ANN ARBOR, MICH. — Premier Products Co. Inc., 801 Green street, has been incorporated to deal in machinery, by the Precision Parts Co., this city.

DETROIT—Vincent Steel Process Co., this city, will erect a factory and office building on Bellevue avenue, Harry Angel, this city, is architect.

DETROIT — Powers Construction



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Co. has been incorporated by Thomas J. Powers, 1837 Myrtle street.

ROYAL OAK, MICH.—Chase Tool Co. plans extensive expansion in its factory on East Fourth street.

New Jersey

DOVER, N. J.—Picatinny arsenal will ask bids Feb. 26 for power press, planetary thread milling machine, detonator cup machine, special drilling machine, and an electric furnace.

Pennsylvania

BRACKENRIDGE, PA.—Allegheny Steel Co., this city, is beginning work on material handling equipment, for the construction of a river rail terminal here.

PHILADELPHIA — Frankfort arsenal asks bids Feb. 17, for fifth wheel shop trucks; Feb. 14, for radial ball bearings; and Feb. 11, for an extra heavy 8-inch gate valve.

PHILADELPHIA — Frankfort arsenal will ask bids Feb. 21 for a punch press, under invoice No. 36-309.

PITTSBURGH—Proposals will be received by the board of public education, H. W. Cramblet secretary, 251 Administration building, until Feb. 11, for automobile trucks, engine lathes, motor headstocks for wooden lathes, motion picture machines, steel lockers, and a steel office counter.

PITTSBURGH — McCann-Shields Paint Co., Alexander avenue, will receive bids soon for the construction of a fireproof addition. Charles R. Geisler, 335 Boulevard of the Allies, this city, is architect.

PITTSBURGH—Fisher Scientific Co., 711 Forbes street, is completing plans for the construction of an addition to its manufacturing facilities here. Hunting, Davis & Dunnels, Century building, is architect.

WASHINGTON, PA.—Agreement to furnish $20,000 for the purchase of an airport site at Buffalo Village, Pa., paved the way for construction of the contemplated city-county airport, recently. These negotiations were made by the Washington county commissioners, and notice of the move was sent immediately to WPA heads in Harrisburg, Pa.

Illinois

CHICAGO—Electric Time & Utilities Inc., 330 South Wells street, has been incorporated by Frank Kuechenmeister, M. H. and Hazel Miller, to deal in electric equipment. M. Adrian Harty, 139 North Clark street, is correspondent.

CHICAGO—Hauck Mfg. Co. Inc., 4657 West Harrison street, has been incorporated by Jules and Blanche Escheman, and C. Stockman, to do a general machinery and hardware business. Correspondent is Kinzie & Powers, 30 North LaSalle street.

SPRINGFIELD, ILL.—Home Appliances Inc., 326 South Sixth street, has been organized by Charles H and Helen M. Love, and Benjamin P. Thomas, to deal in home appliances and general merchandise. Brown Hay & Stephens, this city, is correspondent.

Alabama

BIRMINGHAM, ALA. — United States Steel Corp., 72 Broadway, New York, through its subsidiary, the Tennessee Coal, Iron & Railroad Co., this city, has taken over the properties of the Virginia Bridge & Iron Co. of Roanoke, Va., with plants at this city and Memphis, Tenn. The new company will be known as the Virginia Bridge Co.

BIRMINGHAM, ALA. — Ingalls Iron Works Co., this city, makes the following announcement relative to its 1936 expansion plans: at the Verona, Pa., plant, construction plans include the building of a new double covered crane runway, one 60 feet and one 80 feet, at the loading and storage end of the main fabricating plant, and the extension of the North leanto on the main building, which will be used as a beam shop, and the complete covering and enclosure of the North runway; the construction of a complete new shipyard on the Tennessee river, near Decatur, Ala., with launching ways for new craft and marine ways for repair work. Grading contracts will be let this week, followed immediately by the construction of several buildings and ways, in preparation for the starting of four boats now on order for the Pittsburgh district. R. I. Ingalls is president and W. R. Guest, vice president.

OPELIKA, ALA. — Sale of the Opelika Mfg. Co. to M. Snower & Co., 361 West Chestnut street, has been confirmed. The mill will be reconditioned at a cost of $20,000, and will reopen soon for the manufacture of cotton yarn.

Maryland

BALTIMORE — American Cooperage Co., Davis and Saratoga streets, suffered loss by fire recently to a portion of its warehouse.

BALTIMORE—Western Mill & Lumber Co., 2600 block, West North avenue, suffered loss by fire recently to its lumber yard.

BALTIMORE — Maryland Paper Products Co., 1200 South Eutaw street, has acquired and will occupy factory buildings, known as unit No. 1 of the old Knabe piano plant, Eutaw, Cross, West, and China streets.

District of Columbia

WASHINGTON — Panama canal, purchasing officer, this city, asks bids Feb. 14 for the following: metal window guards, power mowing machines, steel seizing strand, galvanized sheet iron or steel, steel bars and plates, brass, copper, copper-nickel alloy, sheet aluminum, brass and copper pipe, and valves.

WASHINGTON—Hecht Co., this city, has plans prepared for the construction of a modern warehouse and merchandise delivery buildings to be about 250 x 350 feet, and designed to house large stocks of furniture and house furnishings, with work rooms and two delivery systems. Abbott Merkt & Co., New York, is architect, and plans will mature in late spring.

WASHINGTON — Navy department, bureau of supplies and accounts, will ask bids Feb. 14 for the following: Miscellaneous brass and steel bolts and nuts, schedule No. 7116; miscellaneous high speed steel twist drills, delivery to Mare Island, Calif., under schedule No. 7118; miscellaneous chain, schedule No. 7105; 1 stub type motor driven lathe, schedule No. 7107, delivery to San Diego, Calif. Bids also will be taken Feb. 18 for the following: Miscellaneous chain and flight assemblies and sprockets, schedule No. 7137; miscellaneous corrosion-resisting sheet steel, schedule No. 7139, delivery to Puget Sound, Wash.; and miscellaneous copper sheet, schedule No. 7140, with delivery to Puget Sound.

WASHINGTON — Capital Materials Co. Inc., 2 S street southwest, producers of sand and gravel, wants to rent twelve moto-mixers, 2 and 3½-cubic yard capacity, with or without tracks.

Kentucky

WINCHESTER, KY.—W. F. Boone will establish a plant here for florist's supplies. Plans include the installation of sand blast machinery. A warehouse has been leased on Winn avenue.

Florida

ORLANDO, FLA. — Wisconsin Storage Battery Co., Racine, Wis., will recondition the Thrasher building here, for use as an electric battery factory.

PLANT CITY, FLA.—Carey Citrus Products Corp., G. A. Carey president, will probably rebuild burned packing house which recently sustained $100,000 loss.

JACKSONVILLE, FLA. — Bartley Auto Parts Co. has been incorporated by Joe Bartley and Sam Harris, 1302 South Adams street.

JACKSONVILLE, FLA.—McMillan Metal Works Inc. has been organized by T. H. McMillan, E. Forsythe, and R. A. McDonnell.

JACKSONVILLE, FLA. — United States engineer, Box 4970, will ask bids Feb. 12 for suction mouth piece plate steel liners, and forged steel liners; and Feb. 13, for cast steel spud.

Georgia

ATLANTA, GA.—Atlantic Engineering Co., 185 Seventeenth street northeast, wants a 1 to 1½-yard crawler type shovel, diesel preferred, ten 4 to 5-yard, 36-inch gauge, steel beam cars, 8 to 10-ton, 36-inch gauge locomotives, and 30 tons of rails.

Louisiana

NEW ORLEANS, LA.—Equitable Equipment Co. Inc., this city, wants two standard gauge mikado type locomotives; two Heine long drum water tube boilers; one full diesel engine, 600-horsepower; and a large tonnage of relaying steel rails, with bars.

Mississippi

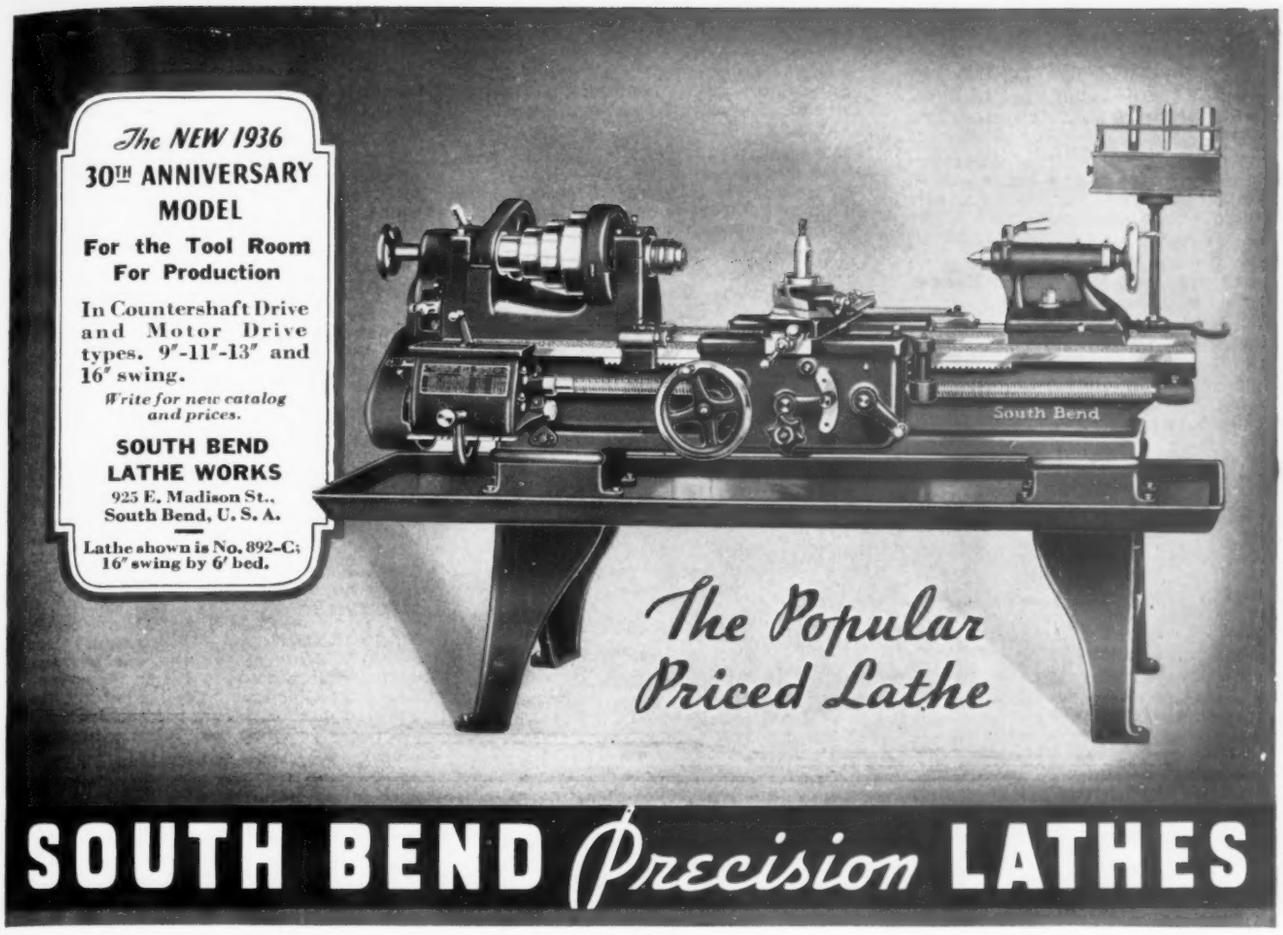
GREENWOOD, MISS.—T. K. Gwin, highway No. 7, sustained loss by fire recently to his lumber plant and a portion of the stock.

PICAYUNE, MISS.—Krouse & Brasfield, Meridian, Miss., architect, will have plans ready for bids in about three weeks for the construction of a factory building for the Pearl River Corp., manufacturer of broadcloth. Building will be of steel framing, steel sash throughout, and will be 253 x 275 feet.

North Carolina

CHARLOTTE, N. C.—Caroline Aniline & Extract Co., G. S. McCarty, 1122 South boulevard, president, has acquired a site at 2308 South boulevard, and will erect a $40,000 factory. Work will begin this month and plans include the construction of 8 units, to represent a total expenditure of $200,000. The initial unit will be

(*Please turn to Page* 88)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(*Concluded from Page 86*)

of steel, and will include the installation of an indirect lighting system and elevators.

CHARLOTTE, N. C. — Southern Dyestuff Corp. has been incorporated by John L. Crist and W. Latimer Brown, Independence building.

CHARLOTTE, N. C. — Southern Chemical Corp. has been organized by John L. Crist and W. Latimer Brown, Independence building.

WALNUT COVE, N. C.—Plant of the Walnut Cove Veneer Co. was recently damaged by fire, at a loss of $60,000.

South Carolina

CHARLESTON, S. C.—Jack Henebery Motor Trucks Inc., has been organized by Jack Henebery and J. N. Martin, this city.

Tennessee

CLEVELAND, TENN. — Hardwick Stove Co. has foundation work under way on a brick and steel addition, including steel windows, to cost $100,000.

KNOXVILLE, TENN. — Tennessee Valley Authority receives bids Feb. 18 for furnishing and delivering main control room switchboards, terminal boards, generator exciter switchboards, hydraulic gauge boards, annunciator boards, and instrument transformers, for Norris power plant. C. H. Garity is director of purchases.

NASHVILLE, TENN.—Public works branch, treasury department, Washington, will receive bids until Feb. 11, for the remodeling of the elevator plant in the United States postoffice and court house, this city.

NASHVILLE, TENN.—Cumberland Battery Mfg. Co., 209-13 First avenue south, will repair recent damage to its plant and install new machinery.

West Virginia

CHARLESTON, W. VA.—Electric Metallurgical Co., Niagara Falls, N. Y., has applied for a federal permit to build a large sewer outfall into the Kanawha river near here.

MANNINGTON, W. VA.—Jones Colliers Inc., Chamber of Commerce building, Pittsburgh, recently was formed to take over the Rachel mine near here, formerly operated by the Cosgrove-Meehan Coal Co. A modern tipple is now being constructed. J. H. Jones is president of the company.

Virginia

ROANOKE, VA.—Columbia Specialty Co., Box 2367, requests information and prices on air conditioning plants.

Missouri

KANSAS CITY, MO.—Western Carbonic & Chemical Co. has been incorporated by C. M. Ruppelius and C. T. Longaker, 5029 Wyandotte street.

KANSAS CITY, MO.—Missouri river division engineer, 707 Postal Telegraph building, asks bids Feb. 12 for steel excavation bracing and steel sheeting.

ST. LOUIS—Chicago-Southern Air Lines, with headquarters at Lambert, Mo., St. Louis field, plans modernizing its facilities and purchasing four 2-motor transport planes and other equipment, at a cost of $300,000. Carleton Putnam, New York, is president.

ST. LOUIS—The K-Line Co. has been incorporated for the purpose of operating electric speed boats, by William L. Bohenkamp and James R. Kelly, Pierce building.

ST. LOUIS—Santa Fe Trail System, Missouri Pacific Transportation Co. and Missouri, Kansas & Oklahoma Coach Lines Inc., now operating bus lines in various sections of this city, will combine and erect a joint terminal on the northeast corner of Broadway and Lucas avenue. The buildings on the site will be torn down and a $40,000 building erected.

ST. LOUIS—Emerson Electric Mfg. Co., this city, has been incorporated. Correspondent is the Corporation Co., Dime Bank building, Detroit.

ST. LOUIS—Metropolitan Mfg. Co. has been incorporated by Walter Trappe, this city, and Carl F. Wymore, Jefferson City, Mo., to do a general woodworking business.

Oklahoma

OKLAHOMA CITY, OKLA.—Precision Machine Inc. has been organized by R. R. Vreeland and W. M. O'Bryan, 723 Northwest Twenty-third street.

OKLAHOMA CITY, OKLA. — Mitchell Drilling Co. has been incorporated by W. M. Mitchell and J. H. Hendricks.

WHEATLAND, OKLA.—Wheatland Hardware & Implement Co., this city, has been incorporated by Edward R. Koelsch and Martin Wolf.

Texas

GAINESVILLE, TEX.—Martin Oil Co. plans constructing a pipeline from steel storage tanks to be erected on Talbott lease to Missouri-Kansas-Texas railroad, where loading tracks will be built. Company has contracted to drill 20 wells.

GALVESTON, TEX. — Herman Weber, 302 Perlstein building, general contractor, wants 22-gauge protected metal siding, steel sash, and a steel rolling door.

LUFKIN, TEX.—City has a site of 160 acres and will develop for Berry airport. Has applied for federal funds, and plans include the building of hangars and gravel runways.

PEAR CITY, TEX.—City, J. A. Kirkland mayor, will receive bids soon for the construction of a waterworks, distributing lines, steel tanks, tower, etc., to cost $30,000.

TYLER, TEX.—Tyler-Texas Refining Co., M. H. McMurrey president, will remodel its cracking unit to operate the Dubbs process.

Wisconsin

LA CROSSE, WIS.—Pyroil Co. Inc., has been organized for the manufacture of lubrication products, by Mrs. Dean Ladd Kidder, T. B. Ganterbein, and Mrs. Beggs Ladd Fleisher.

Minnesota

LITTLE FALLS, MINN. — Kiewel Brewing Co. plans installation of new machinery and equipment, and enlargement of brewing facilities.

MINNEAPOLIS — Explosion and fire wrecked the generating plant of the Air Reduction Sales Co., 327 Twenty-fifth avenue southeast, recently. C. A. Neff is plant superintendent.

MINNEAPOLIS—Bunge Elevator Co., 369 Chamber of Commerce building, plans construction of a grain elevator at Como and Fourteenth avenues southeast, to cost $400,000. The elevator will have 100,000 bushels working capacity and 1,250,000 bushels storage capacity.

MINNEAPOLIS — Electrux Sound Systems, 615 North Fifth street, has been incorporated to manufacture loud speakers, microphones, and public address systems, by John E. McReavy, Vernon L. McReavy, and Raymond Von DeLinde.

California

SAN FRANCISCO—Bethlehem Shipbuilding Corp. Ltd. plans to expend about $2,000,000 for revamping and modernizing its Petero plant here. The company will build two destroyers for the navy at these yards.

Oregon

OSWEGO, OREG.—City council has awarded contract for the construction of a sewer system, to Gilpin Construction Co., Portland, Oreg., subject to PWA approval. The project includes 65,000 feet of pipe and 231 manholes.

SEATTLE—General Welding & Fabricating Co., 1117 Northland avenue, has been incorporated.

Washington

THE DALLES, OREG.—Growers in adjacent territory have asked Port of The Dalles to construct a grain elevator, to be ready when river navigation begins, following completion of the Bonneville, Oreg., dam project.

SPOKANE—Associated Oil Co. will build a service station at Third and Maple streets, involving cantilever arches and steel supports. Plans have been completed for a similar station at Grand Coulee, Wash.

YAKIMA, WASH.—Bureau of reclamation will receive bids Feb. 24 for the Kachess dam, city project, for which the government will furnish materials. Contract will involve the placing of 12½ tons of reinforcing steel, 30 tons of gates, and other metal materials.

SPOKANE—City council has approved a $325,000 WPA airport project, to include a new hangar and improvements.

Foreign

MOSCOW, RUSSIA—Frederic B. Stevens Inc., Detroit, will shortly ship four full automatic and two automatic small parts plating machines to this city, for use in the Stalin Motor plant, manufacturer of automobiles and motor trucks. The machines will be shipped by order of the Amtorg Trading Corp., 261 Fifth avenue, New York, which states that this is the first step in a broad program of expansion involving metal finishing facilities in Russia.

LONDON, ENGLAND—Plans for the completion of England's defense program will require six years, and will involve an expenditure of $1,500,000,000. The program includes the construction of 11 new ships for the navy, 36 cruisers and an annual output of 18 destroyers. Facilities will also be provided for the annual construction of 2000 combat planes, to carry a crew of three men. The rate of airplane construction will depend on that of other countries.

Iron Ore

Iron Ore Prices, Page 67

Baltimore — While iron ore importations at this port in January, according to figures just compiled, were down substantially from December, one of the heaviest months last year, the total amounted to approximately 148,470 tons. Chrome ore importations, at 17,722 tons, were much heavier than in December. Manganese ore arrivals were substantial, 32,310 tons. Pig iron shipments amounted to 3103 tons, and ferromanganese included 500 tons from Holland and 2185 barrels from other ports.

As usual, iron ore shipments came in principally from Chile amounted to 86,400 tons; 34,500 tons came from Cuba, and 12,578 tons from Australia. Seventy-seven hundred and fifty tons of iron ore came in from Russia, and 7244 tons came in from Sweden.

Manganese ore arrivals were comprised of 8700 tons from Brazil, 9560 tons from India, and 14,050 tons from Russia. Chrome ore arrivals included 8000 tons from New Caledonia, 4290 tons from Turkey, 3122 tons from South Africa, and 2310 tons from Russia. This latter shipment was the first to arrive in the United States from Russia since early last summer.

Thirty-five hundred tons of chrome ore arrived at New York recently, including 3000 tons from Southern Rhodesia and 1500 tons from Turkey.

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